ARCHITECTURAL ABBREVIATIONS

A/C	AIR CONDITIONING
ABV	ABOVE
ACST	ACOUSTIC, ACOUSTICAL
ADA	AMERICANS WITH DISABILITIES ACT
ADJ	ADJUSTABLE
ADJT	ADJACENT
AFF	ABOVE FINISH FLOOR
ALT	ALTERNATE
ALUM	ALUMINUM
ANOD	ANODIZED
ARCH	ARCHITECT, ARCHITECTURAL
ASPH	ASPHALT
ASSY	ASSEMBLY
AUTO	AUTOMATIC
BATT	BATT INSULATION
BKR	BACKER ROD
BD	BOARD
BF	BOTH FACES
BLDG	BUILDING
BLKG	BLOCKING
BLW	BELOW
BM	BEAM
BN	BULLNOSE
BOS	BOTTOM OF STEEL
BOT	BOTTOM
BRG	BEARING
BS	BOTH SIDES
BSMT	BASEMENT
BTWN	BETWEEN
BUR	BUILT UP ROOFING
BW	BOTH WAYS
BYND	BEYOND
CG	CORNER GUARD
CIP	CAST IN PLACE
CJ	CONTROL JOINT
CL	CENTER LINE
CLG	CEILING
CLST	CLOSET
CLR	CLEAR
CLRM	CLASSROOM
CMU	CONCRETE MASONRY UNIT
CO	COMPANY
COL	COLUMN
CONC	CONCRETE
CONT	CONTINUE
CONTR	CONTRACTOR
COORD	COORDINATE
CORR	CORRIDOR
CPT	CARPET
CRS	COURSE(S)
CSWK	CASEWORK
CT	CERAMIC TILE
CTR	CENTER
CTV	CABLE TELEVISION
CU	CUBIC
CUH	CABINET UNIT HEATER
CW	COLD WATER PIPING
DBL	DOUBLE
DEPT	DEPARTMENT
DTL	DETAIL
DF	DRINKING FOUNTAIN
DIA	DIAMETER
DIM	DIMENSION
DISP	DISPENSER
DL	DEAD LOAD
DMPF	DAMPROOFING
DN	DOWN
DR	DOOR
DS	DOWNSPOUT
DW	DISHWASHER
DWG	DRAWING
E	EAST
EA	EACH
ED	EDUCATION
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRICAL
ELEV	ELEVATOR
ENCL	ENCLOSURE
ENGR	ENGINEER
EPDM	ETHYLENE PROPYLENE DIENE MONOMER
EQ	EQUAL
EQUIP	EQUIPMENT
EWC	ELECTRIC WATER COOLER
EWH	ELECTRIC WATER HEATER
EXC	EXCAVATE
EXIST	EXISTING
EF	EXHAUST FAN
EXP	EXPANSION
EXT	EXTERIOR
F/F	FACE TO FACE
FA	FIRE ALARM
FAAP	FIRE ALARM ANNUNICATOR PANEL
FACP	FIRE ALARM CONTROL PANEL
FCO	FLOOR CLEAN OUT
FD	FLOOR DRAIN
FDC	FIRE DEPARTMENT CONNECTION
FDTN	FOUNDATION
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER CABINET
FF	FINISH FACE
FFE	FINISH FLOOR ELEVATION
FH	FIRE HYDRANT
FHC	FIRE HOSE CABINET
FIN	FINISH
FIXT	FIXTURE
FLR	FLOOR
FOF	FACE OF FINISH
FOS	FACE OF STUD
FR	FRAME
FRP	FIBERGLASS REINFORCED PLASTIC
FT	FOOT
FUR	FURRING
GA	GAGE
GALV	GALVANIZED
GB	GRAB BAR
GL	GLASS
GLU LAM	GLUED LAMINATED WOOD
GLAZ	GLAZING
GYP	GYPSUM
HB	HOSE BIB
HDR	HEADER
HDW	HARDWARE
HDWD	HARDWOOD
HM	HOLLOW METAL
HDRL	HANDRAIL
HORIZ	HORIZONTAL
HP	HORSEPOWER
HT	HEIGHT
HVAC	HEATING VENTILATING & AIR CONDITIONING
HW	HOT WATER
HYD	HYDRANT
ID	INSIDE DIAMETER
INCL	INCLUDED
INSUL	INSULATION
INT	INTERIOR
JST	JOIST
K	KELVIN
kW	KILOWATT
L	ANGLE
LAV	LAVATORY
LBR	LUMBER
LF	LINEAR FEET (FOOT)
LIB	LIBRARY
LINO	LINOLEUM
LKR	LOCKER
LL	LIVE LOAD
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LT	LIGHT
LVR	LOUVER
MAX	MAXIMUM
MECH	MECHANICAL
MEMB	MEMBRANE
MFD	MANUFACTURED
MFR	MANUFACTURER
MIN	MINIMUM
MIRR	MIRROR
MISC	MISCELLANEOUS
MLDG	MOLDING
MO	MASONRY OPENING
MTD	MOUNTED
MTL	METAL
NA	NOT APPLICABLE
NONCOM	NONCOMBUSTIBLE
NIC	NOT IN CONTRACT
NO	NUMBER
NOM	NOMINAL
NRC	NOISE REDUCTION COEFFICIENT
NTS	NOT TO SCALE
OA	OVERALL
OC	ON CENTER
OD	OUTSIDE DIAMETER
OF/CI	OWNER FURNISHED/CONTRACTOR INSTALLED
OF/OI	OWNER FURNISHED/OWNER INSTALLED
OH	OVERHEAD
OPP	OPPOSITE
OPNG	OPENING
ORD	OVERFLOW ROOF DRAIN
PBD	PARTICLEBOARD
PCF	POUNDS PER CUBIC FOOT
PCP	PORTLAND CEMENT PLASTER
PLAM	PLASTIC LAMINATE
PLBG	PLUMBING
PLYWD	PLYWOOD
PREFAB	PREFABRICATED
PREFIN	PREFINISHED
PRKG	PARKING
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	PAINT
PTD	PAPER TOWEL DISPENSER
PTN	PARTITION
PVC	POLYVINYL CHLORIDE
QT	QUARRY TILE
QTB	QUARRY TILE BASE
QTY	QUANTITY
R	RADIUS, RISER
R-__	THERMAL RESISTANCE
RA	RETURN AIR
RB	RUBBER BASE
RD	ROOF DRAIN
RDL	ROOF DRAIN LEADER
RE:	REFER TO
REINF	REINFORCE
REQD	REQUIRED
REV	REVISION
RM	ROOM
RO	ROUGH OPENING
RPM	REVOLUTIONS PRE MINUTE
RTU	ROOF TOP UNIT
SECT	SECTION
SF	SQUARE FOOT, FEET
SA	SUPPLY AIR
SAT	SUSPENDED ACOUSTICAL TILE
SB	SPLASH BLOCK
SCHED	SCHEDULE
SCP	SCUPPER
SD	SOAP DISPENSER
SOG	SLAB ON GRADE
SGFT	STRUCTURAL GLAZED FACED TILE
SHT	SHEET
SHTHG	SHEATHING
SIM	SIMILAR
SJ	SLIP JOINT
SLDG	SLIDING
SLNT	SEALANT
SND	SANITARY NAPKIN DISPENSER
SNDU	SANITARY NAPKIN DISPOSAL UNIT
SPEC	SPECIFICATION
SQ	SQUARE
SST	STAINLESS STEEL
STC	SOUND TRANSMISSION CLASS
STD	STANDARD
STL	STEEL
STOR	STORAGE
STRUCT	STRUCTURAL
SUSP	SUSPEND(ED)
SYMM	SYMMETRICAL
SYS	SYSTEM
T&G	TONGUE & GROOVE
TD	TOWEL DISPENSER
TEL	TELEPHONE
THK	THICKNESS
TO	TOP OF
TOC	TOP OF CONCRETE
TOM	TOP OF MASONRY
TOS	TOP OF STEEL
TOW	TOP OF WALL
TPD	TOILET PAPER DISPENSER
TYP	TYPICAL
UNFIN	UNFINISHED
UON	UNLESS OTHERWISE NOTED
UR	URINAL
VAR	VARIES, VARIABLE
VCT	VINYL COMPOSITION TILE
VERT	VERTICAL
VEST	VESTIBULE
VIF	VERIFY IN FIELD
VTR	VENT THROUGH ROOF
VWC	VINYL WALL COVERING
W	WEST
W/	WITH
W/O	WITHOUT
WB	WOOD BASE
WBL	WOOD BLOCKING
WC	WATER CLOSET
WCO	WALL CLEAN OUT
WD	WOOD
WF	WIDE FLANGE
WP	WORKING POINT
WSCT	WAINSCOT
WWF	WELDED WIRE FABRIC
YD	YARD

PLUMBING COUNT

GOVERNING CODES: 2011 PIKES PEAK REGIONAL BUILDING CODE
2009 INTERNATIONAL BUILDING CODE
2009 INTERNATIONAL FIRE CODE
2006 INTERNATION MECHANICAL CODE
2006 INTERNATIONAL ENERGY CODE
2012 INTERNATIONAL PLUMBING CODE
2014 NATIONAL ELECTRICAL CODE

BUILDING AREA: BASEMENT: 12321 SF
FIRST FLOOR: 28314 SF
SECOND FLOOR: 14355 SF

PLUMBING COUNTS ARE BASED ON BUILDING OCCUPANCY CLASSIFICATION:

A-3 OCCUPANCY

BASEMENT: 34 OCCUPANTS
FIRST FLOOR: 1653 OCCUPANTS
SECOND FLOOR: 1476 OCCUPANTS
TOTAL: 3097 OCCUPANTS

FEMALE: 1549
MALE: 1548

	WC/URINAL		LAVS	DRINKING FOUNTAIN
	MALE	FEMALE		
	1 PER 125 OCC	1 PER 65 OCC	1 PER 200 OCC	1 PER 500 OCC
FIXTURES REQUIRED	13	24	16	1
FIXTURES PROVIDED	14	15	16	1

FIXTURE COUNT EXCEPTION: THE PROPOSED PROJECT WILL RENOVATE THE EXISTING RESTROOMS OF THE COLORADO SPRINGS CITY AUDITOIUM TO INCREASE THE CAPACITY OF RESTROOM FIXTURES.

CURRENTLY THE MAJORITY OF THE BUILDING IS SERVED BY MENS AND WOMENS RESTROOMS ON THE MAINFLOOR. THERE ARE OTHER RESTROOM IN THE BASEMENT AND IN THE SERVICE AREAS. THE MAJORITY OF PEOPLE ATTENDING THE AUDITORIUM USE THE MAIN FLOOR RESTROOMS.

THIS PROJECT WILL INCREASE THE WATER CLOSETS IN THE MAIN FLOOR WOMENS ROOM FROM 6 TO 10 AND LAVATORIE FROM 4 TO 8.

IN THE MENS ROOM THE NUMBER OF WATER CLOSETS WILL INCREASE FROM 3 TO 4, THE NUMBER OF URINALS WILL INCREASE FROM 3 TO 6 AND LAVATORIES FROM 3 TO 4.

THE WORK IN THIS PROJECT WILL NOT ALTER ANY OF THE USES OF THE BUILDING WITH THE EXCEPTION OF TAKING OVER A STORAGE ROOM TO EXPAND THE RESTROOMS.

THE TOTAL NUMBER OF FIXTURES IS BELOW WHAT IS REQUIRED FOR NEW CONSTRUCTION, HOWEVER THE PROPOSED PROJECT IS CONFINED BY THE EXISTING HISTORIC BUILDING. BY NOT CHANGING ANY OF THE BUILDINGS USES WE ARE CONFIDENT THAT WE ARE IMPROVING THE BUILDING AND OCCUPANT COMFORT AND DO NOT NEED TO ME THE PRESCRIBED NUMBER OF FIXTURES PER THE IPC2012.

CONSTRUCTION TYPE: II-B
NUMBER OF STORIES: 2

NATIONAL REGISTER OF HISTORIC PLACES INFORMATION: THE COLORADO SPRINGS CITY AUDITORIUM WAS LISTED ON THE NATIONAL REGISTER IN NOVEMBER 7, 1995.
SITE NUMBER: 5EP.628

VICINITY MAP

SHEET INDEX

INDEX GENERAL SHEETS

INDEX STRUCTURAL SHEETS

INDEX ARCHITECTURAL SHEETS

INDEX ELECTRICAL SHEETS

INDEX MECHANICAL SHEETS

INDEX PLUMBING SHEETS

PROJECT TEAM

ARCHITECT:

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JVA CONSULTING ENGINEERS
1319 Spruce Street
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ELECTRICAL ENGINEER:

Corey Electrical Engineering, Inc.
7822 S. Wheeling Court, Suite B
Englewood, CO 80112

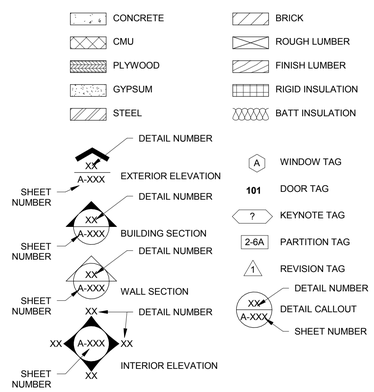
Ph: 303-696-1257
Fax: 303-696-1459
URL: www.COREYENG.com

MECHANICAL/PLUMBING ENGINEER:

MEP Engineering, Inc.
6402 S. Troy Circle, Suite 100
Centennial, Colorado 80111

Ph: 303-936-1633
Fax: 303-934-3299
URL: www.MEP-ENG.com

ARCHITECTURAL LEGEND



COLORADO SPRINGS CITY AUDITORIUM RESTROOM RENOVATION

221 E KIOWA ST, COLORADO SPRINGS, CO 80903

ISSUED FOR BIDDING AND CONSTRUCTION

OCTOBER 16, 2015

SLATERPAULL
hord | coplan | macht

1331 Nineteenth Street
Denver, CO. 80202
P 303.607.0977
www.slaterpaull.com

CONSULTANT:

PROJECT:

CS AUDITORIUM RESTROOM RENOVATION

221 E Kiowa St Colorado Springs, CO 80903

OWNER:

COLORADO SPRINGS CITY AUDITORIUM

221 E Kiowa St
Colorado Springs, CO 80903

ISSUE:

10/16/15	ISSUED FOR BIDDING AND CONSTRUCTION

DRAWING INFORMATION:

PROJECT NO:	11503.000
DRAWN BY:	G Lee
CHECKED BY:	J Reske
APPROVED BY:	G Petri

SHEET TITLE:

GENERAL INFORMATION AND SHEET INDEX

G-001

SHEET OF

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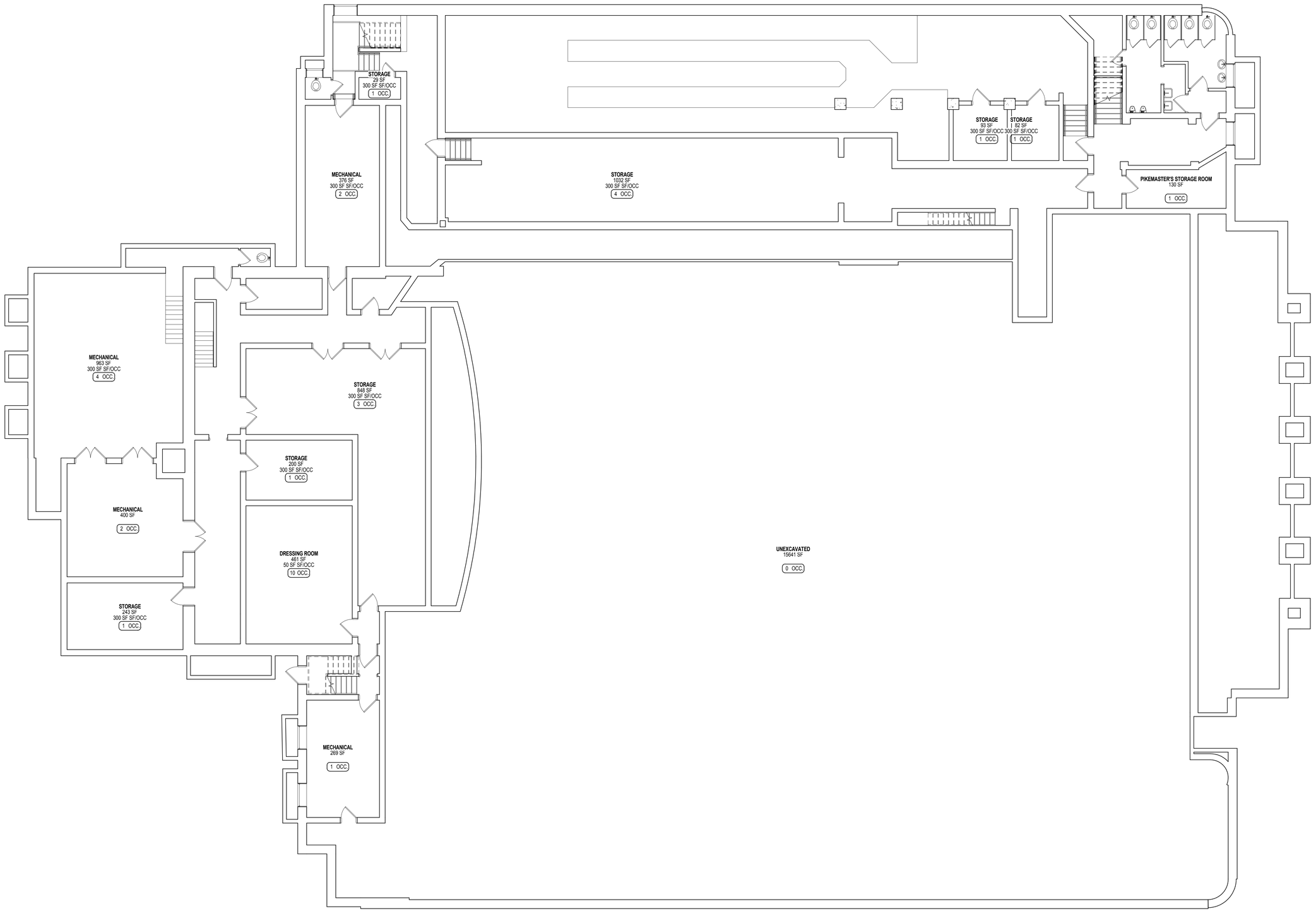

A1 **BASEMENT CODE PLAN**
1/8" = 1'-0"

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CONSULTANT:

PROJECT:

CS AUDITORIUM RESTROOM RENOVATION

221 E Kiowa St Colorado Springs, CO 80903

OWNER:

COLORADO SPRINGS CITY AUDITORIUM

221 E Kiowa St
Colorado Springs, CO 80903

ISSUE:

10/16/15	ISSUED FOR BIDDING AND CONSTRUCTION

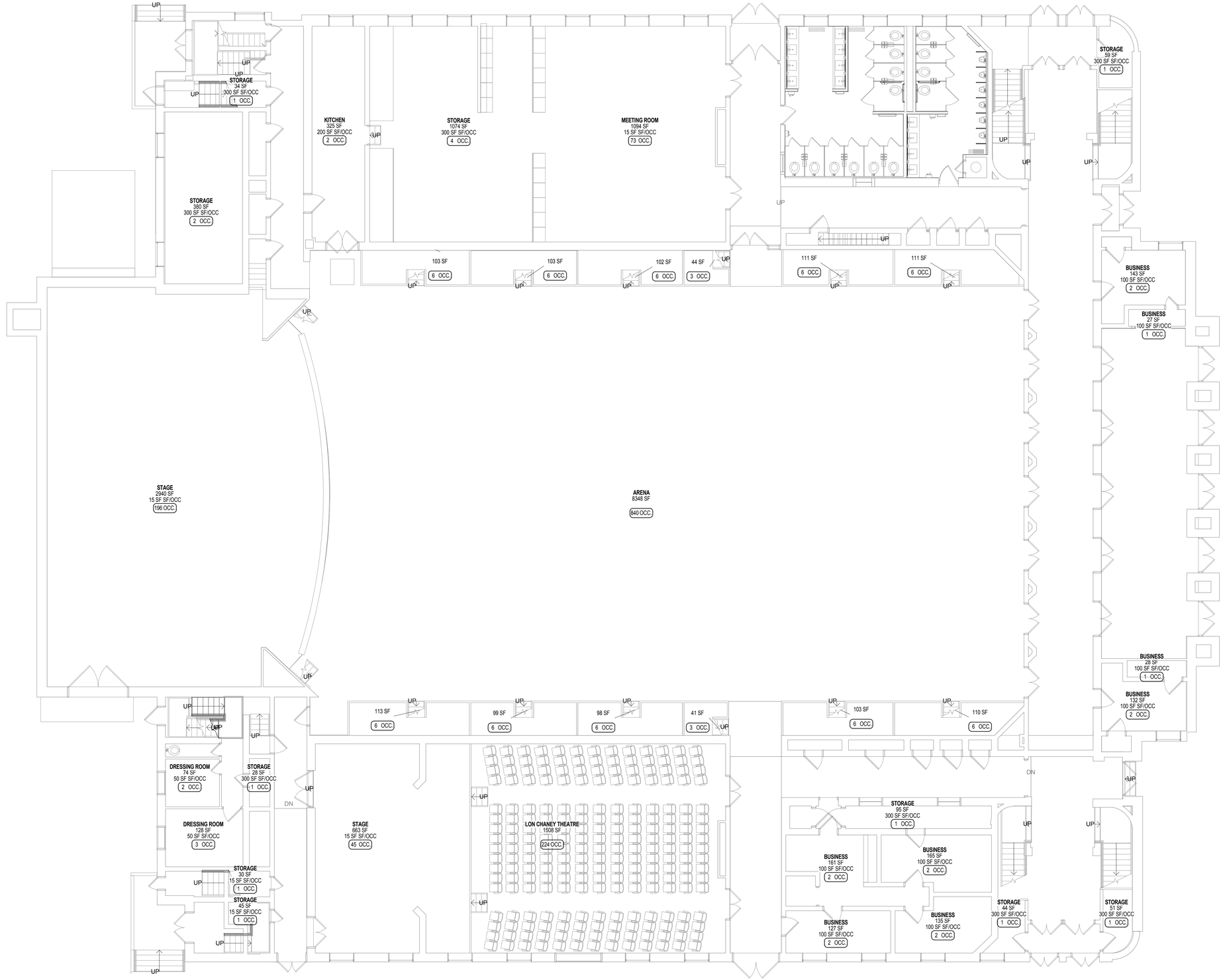
DRAWING INFORMATION:

PROJECT NO:	11503.000
DRAWN BY:	G Lee
CHECKED BY:	J Reske
APPROVED BY:	G Petri

SHEET TITLE:

BASEMENT CODE PLAN

G-100
SHEET OF



A1 FIRST FLOOR CODE PLAN
1/8" = 1'-0"

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CONSULTANT:

PROJECT:

CS AUDITORIUM RESTROOM RENOVATION

221 E Kiowa St Colorado Springs, CO 80903

OWNER:

COLORADO SPRINGS CITY AUDITORIUM

221 E Kiowa St
Colorado Springs, CO 80903

ISSUE:

10/16/15	ISSUED FOR BIDDING AND CONSTRUCTION

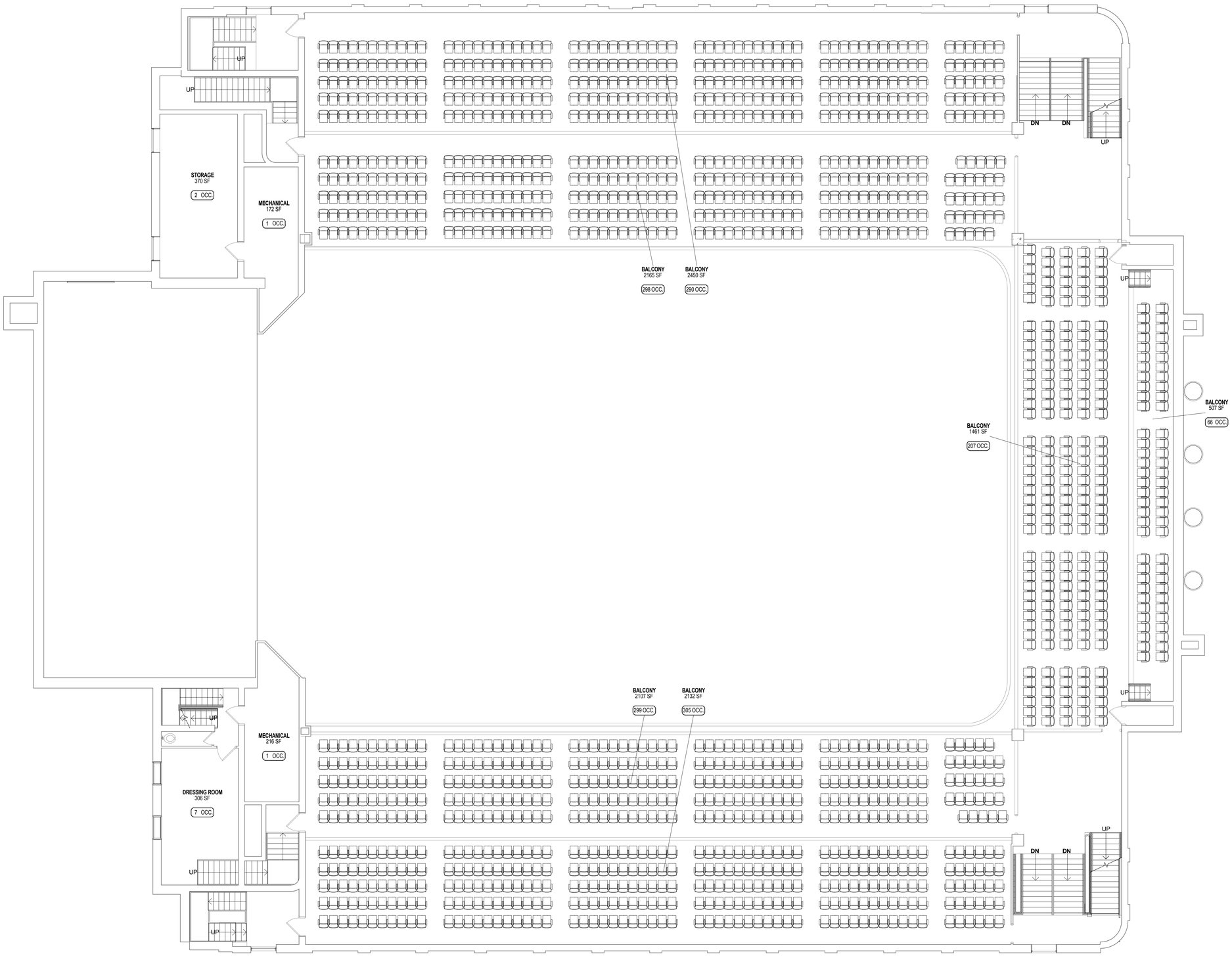
DRAWING INFORMATION:

PROJECT NO:	11503.000
DRAWN BY:	G Lee
CHECKED BY:	J Reske
APPROVED BY:	G Petri

SHEET TITLE:

FIRST FLOOR CODE PLAN

G-101
SHEET OF



A1 **SECOND FLOOR CODE PLAN**
1/8" = 1'-0"

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SLATERPAULL
hord | coplan | macht

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CONSULTANT:

PROJECT:

CS AUDITORIUM
RESTROOM
RENOVATION

221 E Kiowa St Colorado Springs, CO 80903

OWNER:

COLORADO SPRINGS
CITY AUDITORIUM

221 E Kiowa St
Colorado Springs, CO 80903

ISSUE:

10/16/15	ISSUED FOR BIDDING AND CONSTRUCTION

DRAWING INFORMATION:

PROJECT NO:	11503.000
DRAWN BY:	G Lee
CHECKED BY:	J Reske
APPROVED BY:	G Petri

SHEET TITLE:

SECOND FLOOR
CODE PLAN

G-102
SHEET OF

STRUCTURAL GENERAL NOTES

DESIGN LOADS: 2011 Pikes Peak Regional Building Code, 2009 International Building Code, 2009 International Existing Building Code, ASCE 7-05

Risk Category III Substantial Hazard

Floor Live Loads:			
Occupancy or use	Uniformly Distributed (psf)	Concentrated (lbs)	Live Load Reduction
Public Spaces	100	2,000	Yes*
First Floor Corridors	100	N/A	Yes
Restrooms	60	N/A	Yes

*members supporting 2+ floors

REINFORCED CONCRETE:
Design is based on ACI 318 "Building Code Requirements for Reinforced Concrete."
Concrete work shall conform to ACI 301 "Standard Specifications for Structural Concrete."

Structural concrete shall have the following properties:

	f'c, psi	Max W/C	Maximum	Slump, inches	Entrained Air, percent	Cement Type	Admixtures,
Intended Use	28 day	Ratio	Aggregate	(+/- 1")	(+/- 1.5%)		Comments
Structural slab on deck	3,500	0.50	3/4" Stone	4	1.5	I	

Detailing, fabrication, and placement of reinforcing steel shall be in accordance with ACI 315 "Details and Detailing of Concrete Reinforcement."
Reinforcing bars shall conform to ASTM A615, Grade 60, except ties or bars shown to be field-bent, which shall be Grade 40.
Bars to be welded shall conform to ASTM A706.
Unless noted otherwise on the Structural Drawings, lap bars 50 diameters (minimum).
At corners and intersections, make horizontal bars continuous or provide matching corner bars for each layer of reinforcement.
Trim openings in walls and slabs with 2-#5 for each layer of reinforcement, fully developed by extension or hook.
Except as noted on the drawings, concrete protection for reinforcement in cast-in-place concrete shall be as follows:

Cast against and permanently exposed to earth:	3"
Exposed to earth or weather:	
#6 through #18 bars	2"
#5 bar, W31 or D31 wire, and smaller	1-1/2"
Not exposed to weather or in contact with ground:	
Slabs, walls, joists: #11 bars and smaller	3/4"
Beams and columns:	
Primary reinforcement	1-1/2"
Stirrups, ties, spirals	1-1/2"

STRUCTURAL STEEL:
Structural steel shall be detailed, fabricated, and erected in accordance with the "Specification for Structural Steel Buildings" (AISC 360) and the "Code of Standard Practice for Steel Buildings and Bridges" (AISC 303) by the American Institute of Steel Construction (AISC).
Rolled shapes, including plates, channels, WTs, and angles shall conform to ASTM A36-04, 36 ksi yield.
Hollow structural section (HSS) rectangular shapes shall conform to ASTM A500-03a, Grade B, 46 ksi yield.
Anchor rods shall conform to ASTM F1554-99, Grade (36, 55, and/or 105) as noted on the Structural Drawings with weldability supplement S1.
Welding shall be done by a certified welder in accordance with the AISC documents listed above, the American Welding Society (AWS) D1.1: 2006 Structural Welding Code, and the recommendations for use of weld E70 electrodes. Where not specifically noted, minimum weld shall be 3/16" Fillet by length of contact edge.
All post-installed anchors shall have current International Code Council Evaluation Service (ICC-ES) reports, shall be installed in accordance with the manufacturer's requirements, and shall be approved for use in cracked concrete.
Chemical anchors shall be approved epoxy or similar adhesive type as appropriate for installation in solid and non-solid base materials.

STEEL DECKING:
Steel roof, non-composite floor (or 'form'), and composite floor deck shall be manufactured and erected in accordance with the standard deck specifications and the "Manual of Construction with Steel Deck" (SDI No. MOC1) as prepared by the Steel Deck Institute (SDI).
Non-composite and composite floor deck shall be connected to supporting members and interconnected as required to satisfy SDI minimum requirements except as noted on the Structural Drawings.
Welding patterns, screw patterns, and details shall be indicated on the deck supplier's shop drawings.

SHOP DRAWINGS:
The Structural Drawings are copyrighted and shall not be copied for use as erection plans or shop details. Use of JVA's electronic files as the basis for shop drawings requires prior approval by JVA, a signed release of liability by the General Contractor and/or his subcontractors, and deletion of JVA's name and logo from all sheets so used.
The General Contractor shall submit in writing any requests to modify the Structural Drawings or Project Specifications.
All shop and erection drawings shall be checked and stamped (after having been checked) by the General Contractor prior to submission for Structural Engineer's review; shop drawing submittals not checked by the General Contractor prior to submission to the Structural Engineer will be returned without review.
Furnish two (2) prints of shop and erection drawings to the Structural Engineer for review prior to fabrication for
reinforcing steel,
structural steel,
steel deck,
concrete mix designs.
Submit in a timely manner to permit 10 working days for review by the Structural Engineer.
Shop drawings submitted for review do not constitute "request for change in writing" unless specific suggested changes are clearly marked. In any event, changes made by means of the shop drawing submittal process become the responsibility of the one initiating the change.

FIELD VERIFICATION OF EXISTING CONDITIONS:
The General Contractor shall thoroughly inspect and survey the existing structure to verify conditions that affect the work shown on the drawings.
The General Contractor shall report any variations or discrepancies to the Architect and Structural Engineer before proceeding.

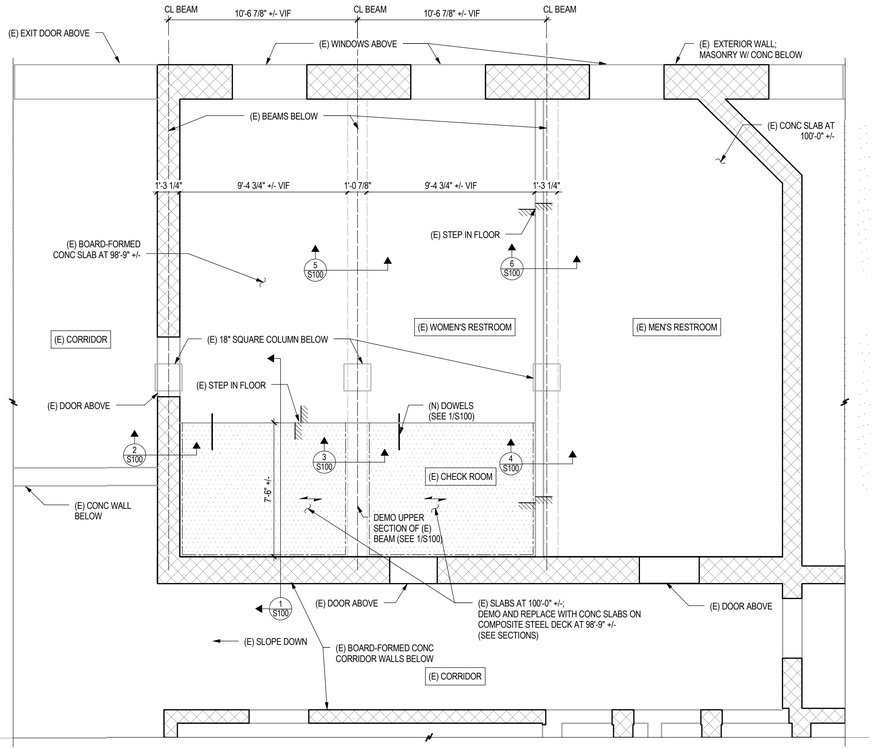
STRUCTURAL ERECTION AND BRACING REQUIREMENTS:
The Structural Drawings illustrate and describe the completed structure with elements in their final positions, properly supported, connected, and/or braced.
The Structural Drawings illustrate typical and representative details to assist the General Contractor. Details shown apply at all similar conditions unless otherwise indicated. Although due diligence has been applied to make the drawings as complete as possible, not every detail is illustrated and not every exceptional condition is addressed.
All proprietary connections and elements shall be installed in accordance with the manufacturers' recommendations.
All work shall be accomplished in a workmanlike manner and in accordance with the applicable codes and local ordinances.
The General Contractor is responsible for coordination of all work, including layout and dimension verification, materials coordination, shop drawing review, and the work of subcontractors. Any discrepancies or omissions discovered in the course of the work shall be immediately reported to the Architect and Structural Engineer for resolution. Continuation of work without notification of discrepancies relieves the Architect and Structural Engineer from all consequences.
Unless otherwise specifically indicated, the Structural Drawings do not describe methods of construction.
The General Contractor, in the proper sequence, shall perform or supervise all work necessary to achieve the final completed structure, and to protect the structure, workmen, and others during construction. Such work shall include, but not be limited to temporary bracing, shoring for construction equipment, shoring for excavation, formwork, scaffolding, safety devices and programs of all kinds, support and bracing for cranes and other erection equipment.
Do not backfill against basement or retaining walls until supporting slabs and floor framing are in place and securely anchored, unless adequate temporary bracing is provided.
Temporary bracing shall remain in place until all floors, walls, roofs and any other supporting elements are in place.
The Architect and Structural Engineer bear no responsibility for the above items, and observation visits to the site do not in any way include inspections of these items.

LETTERS OF CONSTRUCTION COMPLIANCE:
The General Contractor shall determine from the local building authority, at the time the building permit is obtained, whether any letters of construction compliance will be requested from the Structural Engineer.
The Contractor shall notify the Structural Engineer of all such requirements in writing prior to the start of construction.
Two day advance notice shall be given when requesting site visits necessary as the basis for the compliance letter.
The General Contractor shall provide copies of all third-party testing and inspection reports to the Architect and Structural Engineer a minimum of one week prior to the date that the compliance letter is needed.

SPECIAL INSPECTIONS:
The following Special Inspections and Testing shall be performed by a qualified Special Inspector, retained by the Owner, in accordance with the following sections of IBC Chapter 17:

Section 1704 Special Inspections and the following sub-sections:
1704.3 Steel Construction including 1704.3.1 Welding, 1704.3.2 Details, 1704.3.3 High Strength Bolts
1704.4 Concrete Construction

The Special Inspector shall be a qualified person who shall demonstrate competence, to the satisfaction of the building official, for inspection of the particular type of construction or operation requiring special inspection. The approved inspector must be independent from the contractor responsible for the work being inspected.
Duties and responsibilities of the Special Inspector shall be to inspect and/or test the work outlined above and within the Statement of Special Inspections in accordance with Chapter 17 of the IBC for conformance with the approved construction documents. All discrepancies shall be brought to the immediate attention of the contractor for correction.
Per Section 1704.1.2 the Special Inspector shall furnish regular reports to the building official and the Structural Engineer. Progress reports for continuous inspection shall be furnished weekly. Individual reports of periodic inspections shall be furnished within one week of inspection dates. The reports shall note uncorrected deficiencies, correction of previously reported deficiencies, and changes to the approved construction documents authorized by the Structural Engineer of Record.
The Special Inspector shall submit a final signed report within 10 days of the final special inspection stating whether the work requiring special inspection was, to the best of the inspector's knowledge, in conformance with the approved construction documents and the applicable workmanship provisions of the IBC. Work not in compliance shall be noted in the report.
The Contractor shall submit a written statement of responsibility to the Building Official and the Owner prior to the commencement of work on a main wind- or seismic-force-resisting system per section 1709. The statement shall acknowledge the awareness of the special listed requirements of designated seismic system or a wind- or seismic-resisting component in the Statement of Special Inspections per section 1705.
Except as noted, the special inspections outlined above are in addition to, and beyond the scope of, periodic Structural Observations as defined in section 1710. Structural Observations are included in the structural engineering design and construction administration services provided by the Structural Engineer.



NORTH

1 S001 FIRST FLOOR PARTIAL FRAMING PLAN

1/4" = 1'-0"

0 1' 2' 4' 8'

* (E) INDICATES EXISTING
* (N) INDICATES NEW
* CONTRACTOR SHALL FIELD VERIFY ALL (E) DIMENSIONS AND CONDITIONS PRIOR TO START OF CONSTRUCTION. NOTIFY A/E OF ANY DISCREPANCIES BEFORE PROCEEDING WITH NEW WORK.
* SEE SECTION C4/A-410 FOR STEEL LOOSE LINTELS OVER LOUVER OPENINGS IN EXTERIOR WALL

STRUCTURAL DRAWING LIST	
S001	GENERAL NOTES AND PARTIAL PLAN
S100	SECTIONS

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JVA Project # 17727

PROJECT:

CS AUDITORIUM RESTROOM RENOVATION

221 E Kiowa St Colorado Springs, CO 80903

OWNER:

COLORADO SPRINGS CITY AUDITORIUM

ISSUE:

10/16/15	ISSUE FOR BIDDING AND CONSTRUCTION

DRAWING INFORMATION:

PROJECT NO:	11503.000
DRAWN BY:	EWH
CHECKED BY:	IRG
APPROVED BY:	AJT

SHEET TITLE:

GENERAL NOTES AND PARTIAL PLAN

S001

SHEET OF

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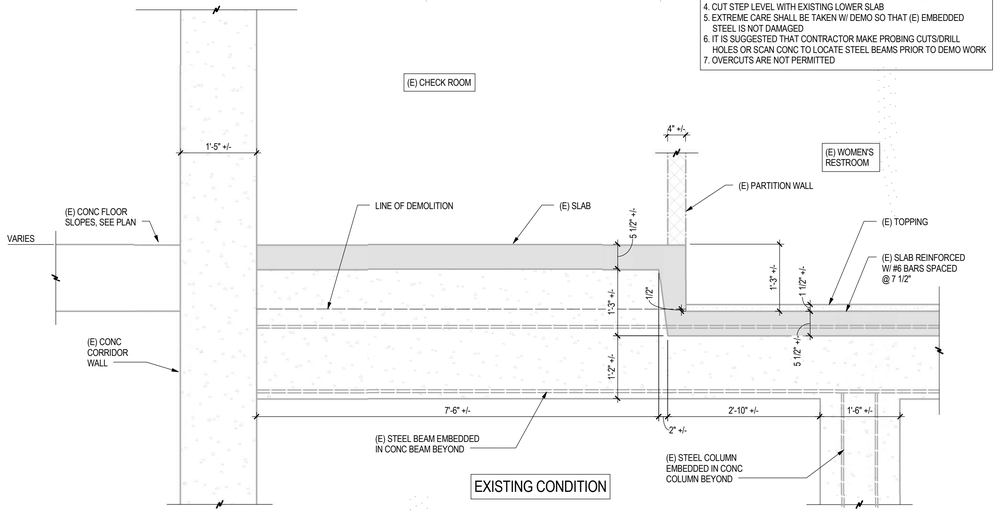
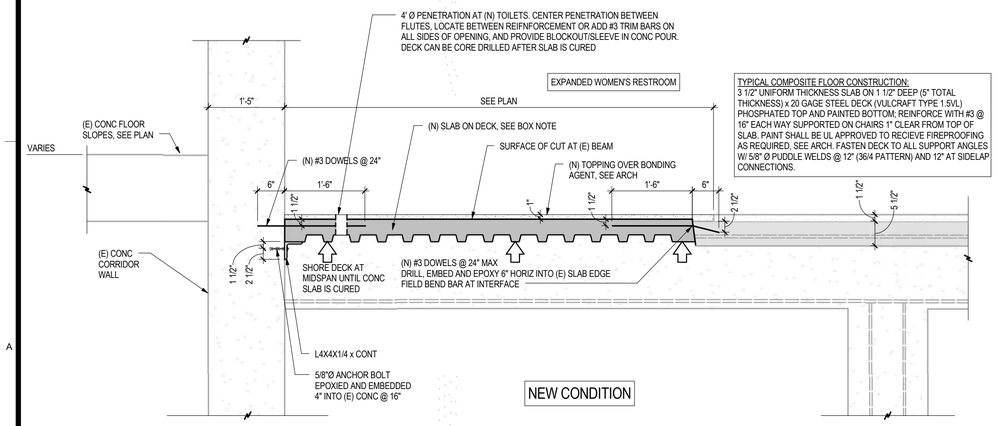
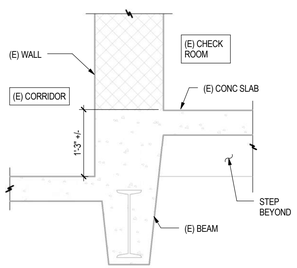


DEMOLITION NOTES
1. DEMO EXISTING PARTITION WALL
2. DEMO EXISTING UPPER SLAB
3. CUT CONC BEAMS 1/2" HIGHER THAN EXISTING LOWER SLAB
4. CUT STEP LEVEL WITH EXISTING LOWER SLAB
5. EXTREME CARE SHALL BE TAKEN W/ DEMO SO THAT (E) EMBEDDED STEEL IS NOT DAMAGED
6. IT IS SUGGESTED THAT CONTRACTOR MAKE PROBING CUTS/DRILL HOLES OR SCAN CONC TO LOCATE STEEL BEAMS PRIOR TO DEMO WORK
7. OVERCUTS ARE NOT PERMITTED



TYPICAL COMPOSITE FLOOR CONSTRUCTION:
3 1/2" UNIFORM THICKNESS SLAB ON 1 1/2" DEEP (5" TOTAL THICKNESS) x 20 GAGE STEEL DECK (VULCRAFT TYPE 1.5VL) PHOSPHATED TOP AND PAINTED BOTTOM, REINFORCE WITH #3 @ 16" EACH WAY, SUPPORTED ON CHAIRS 1" CLEAR FROM TOP OF SLAB. PAINT SHALL BE UL APPROVED TO RECIEVE FIREPROOFING AS REQUIRED, SEE ARCH. FASTEN DECK TO ALL SUPPORT ANGLES W/ 5/8" Ø PUDDLE WELDS @ 12" (36/4 PATTERN) AND 12" AT SIDELAP CONNECTIONS.

1 S100 SECTION
3/4" = 1'-0"



2 S100 SECTION
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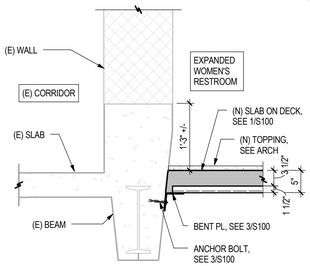
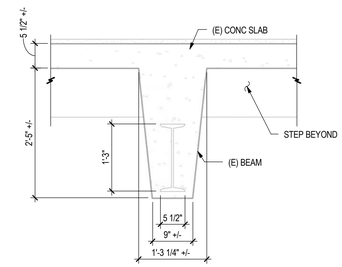
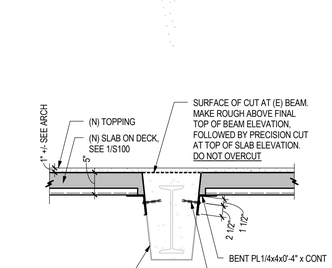


3 S100 SECTION
3/4" = 1'-0"

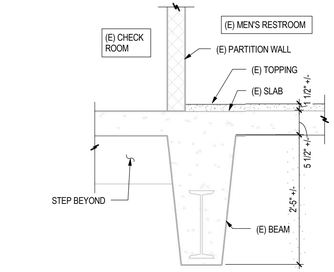


EXISTING CONDITIONS

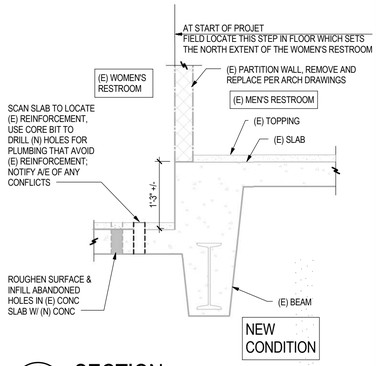


NEW CONDITIONS

4 S100 SECTION
3/4" = 1'-0"



5 S100 SECTION
3/4" = 1'-0"



6 S100 SECTION
3/4" = 1'-0"

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SECTIONS

S100

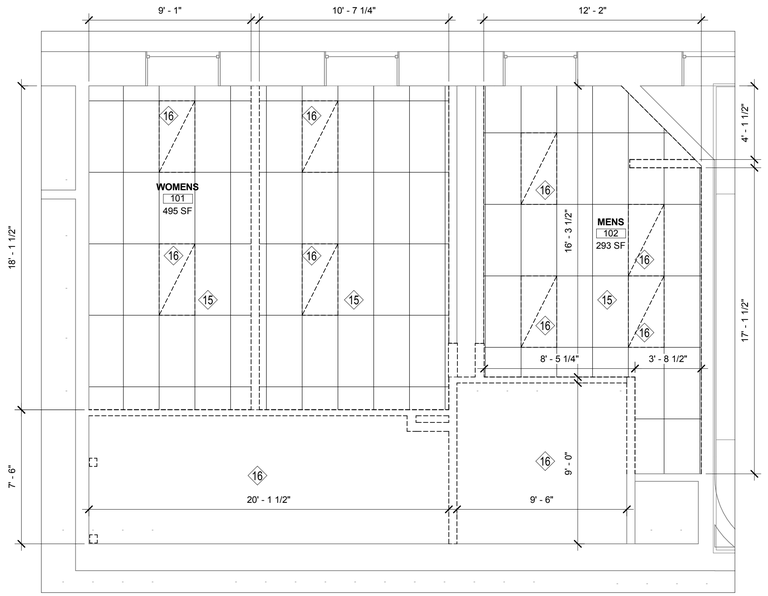
SHEET OF

CONSTRUCTION ENLARGED PLAN GENERAL NOTES

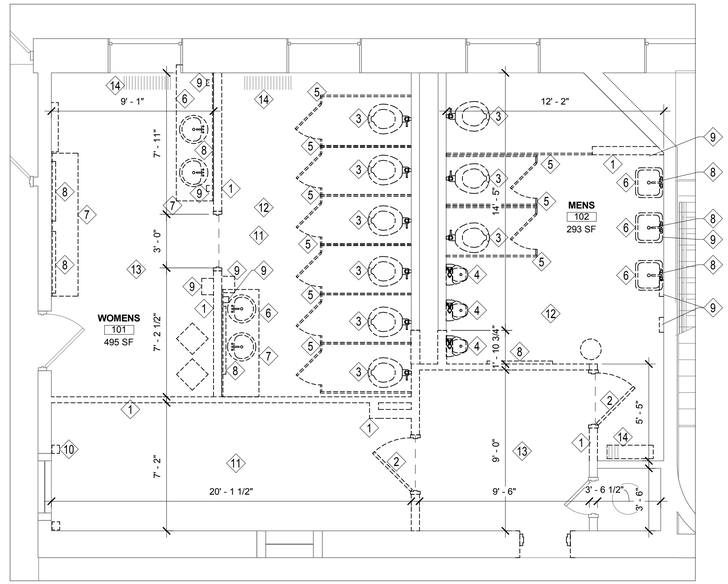
1. GENERAL CONTRACTOR TO COORDINATE SCHEDULING ALL WORK WITH OWNER.
2. GENERAL CONTRACTOR TO VERIFY IN FIELD ALL DIMENSIONS AND EXISTING DIMENSIONS PRIOR TO COMMENCEMENT OF WORK. NOTIFY ARCHITECT IF DISCREPANCIES OCCUR.
3. PROTECT ALL EXISTING TO REMAIN FROM DAMAGE DURING DEMOLITION AND CONSTRUCTION.
4. GENERAL CONTRACTOR TO LIMIT STORAGE AND ASSEMBLY OF MATERIALS TO THE STAGING AREA.
5. DO NOT SCALE DRAWINGS; NOTIFY ARCHITECT IF CRITICAL DIMENSIONS DO NOT APPEAR ON THE DRAWINGS.
6. NOT ALL KEY NOTES ARE USED ON ALL SHEETS.

SHEET NOTES - DEMOLITION PLANS

1 REMOVE EXISTING INTERIOR PARTITION WALL
2 REMOVE EXISTING DOOR AND FRAME
3 REMOVE EXISTING WATER CLOSET AND CAP PLUMBING
4 REMOVE EXISTING WALL MOUNTED URINAL AND CAP PLUMBING
5 REMOVE EXISTING RESTROOM PARTITION
6 REMOVE EXISTING LAVATORY SINK AND FAUCETS
7 REMOVE EXISTING COUNTEROP
8 REMOVE EXISTING WALL MOUNTED MIRROR
9 REMOVE EXISTING WALL MOUNTED SOAP DISPENSERS, HAND DRYERS AND PAPER TOWEL DISPENSERS
10 REMOVE EXISTING OPERABLE PANEL
11 REMOVE EXISTING SHELVING IN STORAGE ROOM
12 REMOVE EXISTING 2"X2" TILE FLOORING
13 REMOVE EXISTING 6"X6" TILE FLOORING
14 EXISTING RADIATOR TO REMAIN
15 RCP - REMOVE EXISTING 2X4 LAY-IN GRID CEILING INCLUDING ALL MOUNTING HARDWARE. TAKE CARE TO MINIMIZE DAMAGE TO EXISTING PLASTER WALLS AND CEILINGS.
16 RCP - COORDINATE THE REMOVAL OF EXISTING ELECTRICAL FIXTURES WITH ELECTRICAL PLANS



A2 ENLARGED RESTROOM DEMO RCP
1/4" = 1'-0"



A4 ENLARGED RESTROOM DEMO PLAN
1/4" = 1'-0"

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APPROVED BY:	G Petri

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ENLARGED RESTROOM DEMO PLAN & RCP

AD410
SHEET OF

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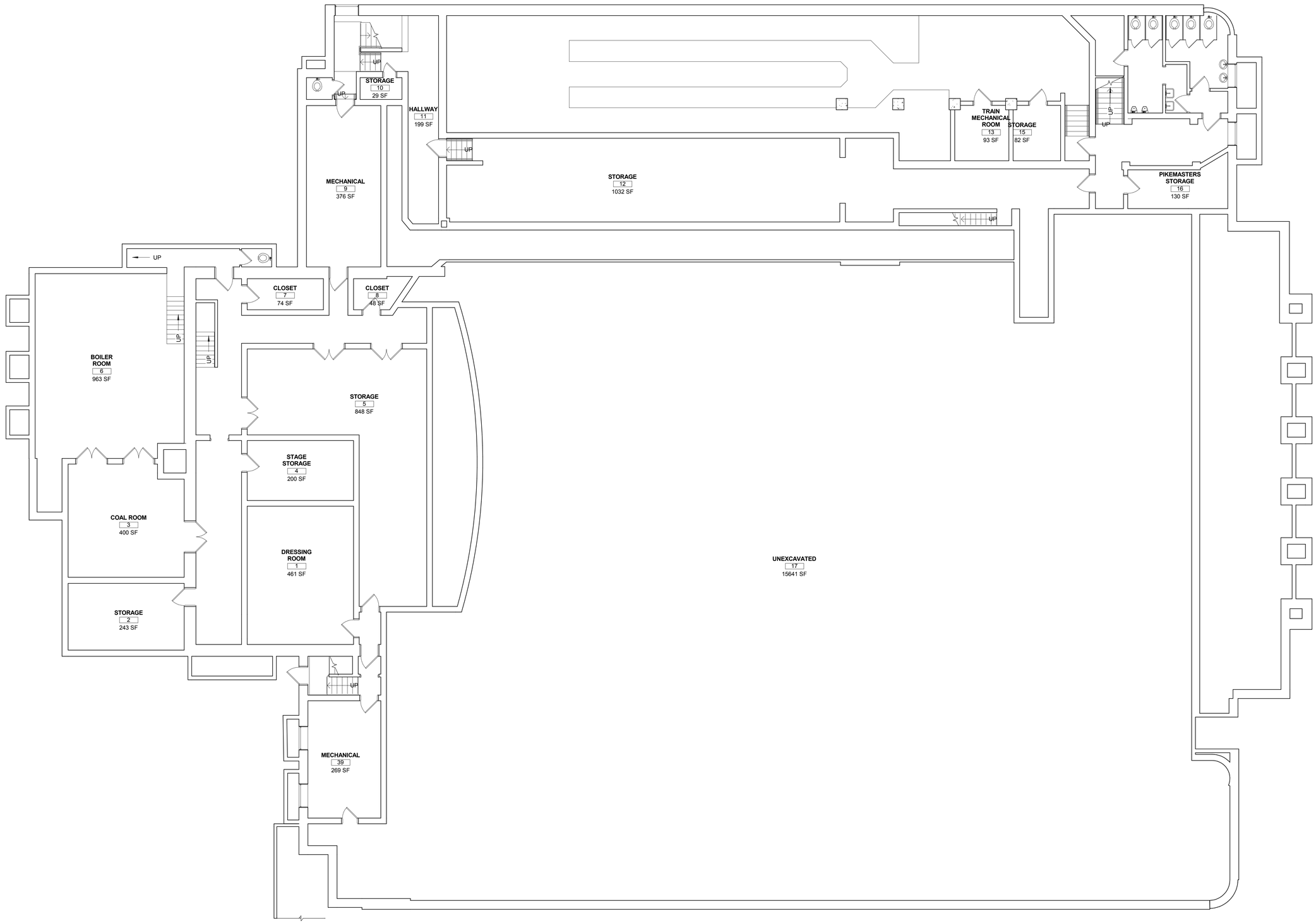

A1 **BASEMENT FLOOR PLAN**
1/8" = 1'-0"

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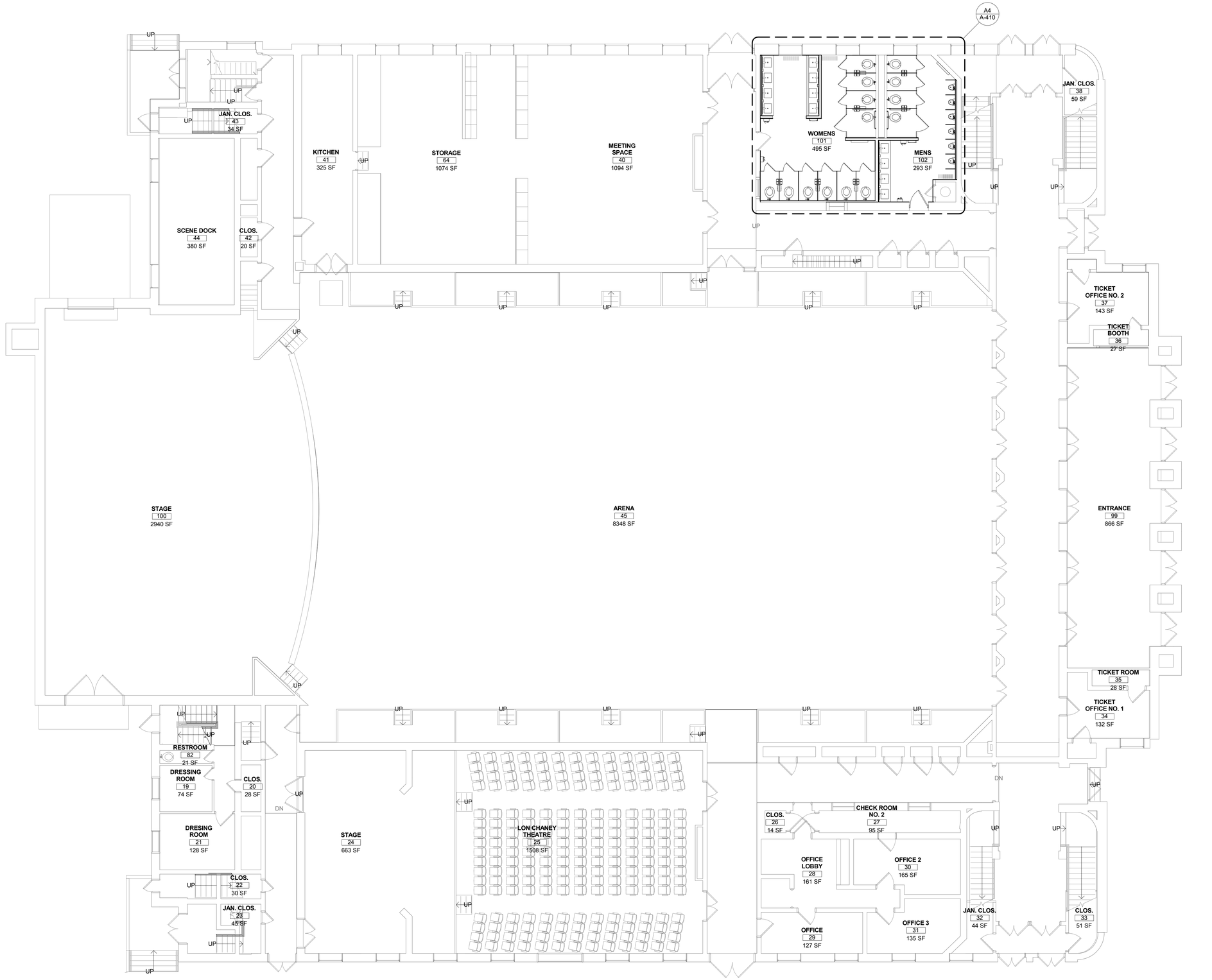
BASEMENT FLOOR PLAN (FOR REFERENCE ONLY)

A-110

SHEET OF



A1 FIRST FLOOR PLAN
1/8" = 1'-0"

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APPROVED BY:	G Petri

SHEET TITLE:

FIRST FLOOR PLAN

A-111
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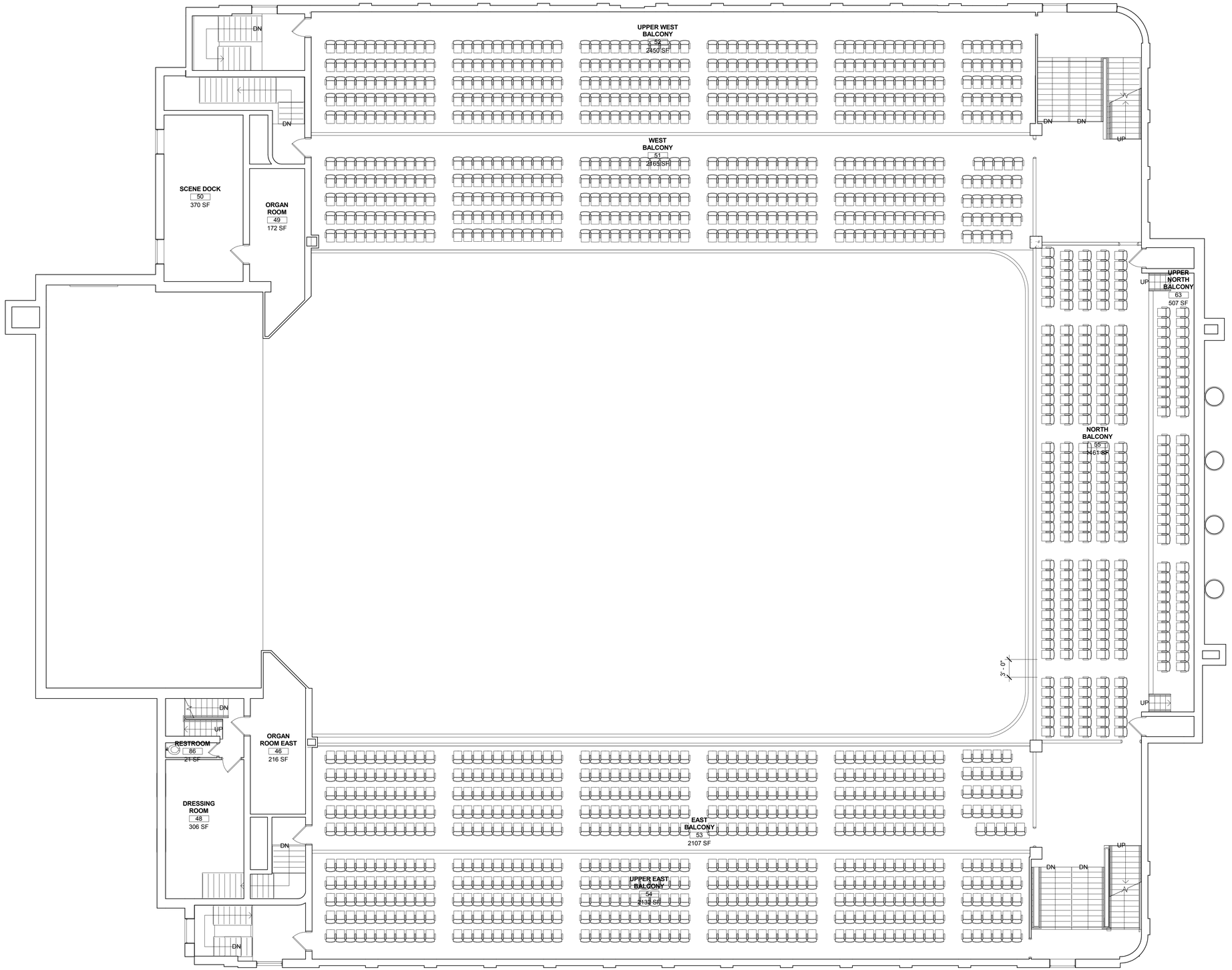

A1 SECOND FLOOR PLAN

1/8" = 1'-0"

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APPROVED BY:	G Petri

SHEET TITLE:

SECOND FLOOR PLAN (FOR REFERENCE ONLY)

A-112

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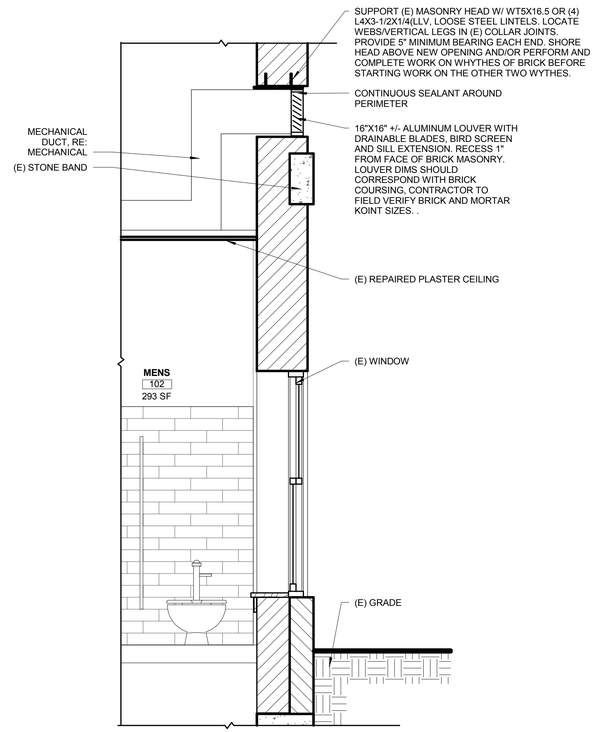


C4 WALL SECTION AT EXHAUST VENT
1/2" = 1'-0"

RESTROOM GENERAL NOTES

1. ALL 'HOLD' AND 'MIN' DIMENSIONS TAKE PRECEDENT OVER OTHER DIMENSIONS. IF THERE IS A DESCREPENCY, NOTIFY THE ARCHITECT.
2. INTERIOR WALL PARTITION DIMENSIONS SHOWN ARE TO FACE OF FINISHED MATERIAL U.N.O.
3. ALL FLOOR MATERIALS TO BE BUTT JOINTED AT TRANSITIONS ON CENTER OF DOOR WHERE APPLICABLE.
4. PROVIDE *SCHLUTER SYSTEMS* EDGE PROTECTION AND TRANSITION PROFILES AT ALL OUTSIDE CORNERS, AND WHERE MATERIAL CHANGES AND/OR STOPS.
5. PAINT ALL EXPOSED PIPES, AIR GRILLES, ETC. TO MATCH ADJACENT WALL COLOR
6. ALL WALL MOUNTED CASEWORK, MILLWORK, HARDWARE, EQUIPMENT, ETC. SHALL BE ANCHORED TO METAL STRAPPING OR 3/4" FRT PLYWOOD BACKING BETWEEN STUDS, U.N.O. COORDINATE ACCORDINGLY.
7. ALL TILE TYPES AND PAINT COLORS TO WRAP AROUND OUTSIDE CORNERS AND TERMINATE AT INSIDE CORNERS, TYP.

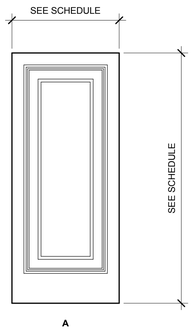
SHEET NOTES - ENLARGED PLAN

1 PATCH AREA IN WALL WHERE MECHANICAL DUCT REMOVED ABOVE CEILING. USE COMMON BRICK AND TYPE O MORTAR FOR INFILL OF CLAY TILE PARTITIONS. FINISH WITH PLASTER AND PAINT TO MATCH SURROUNDING WALL.

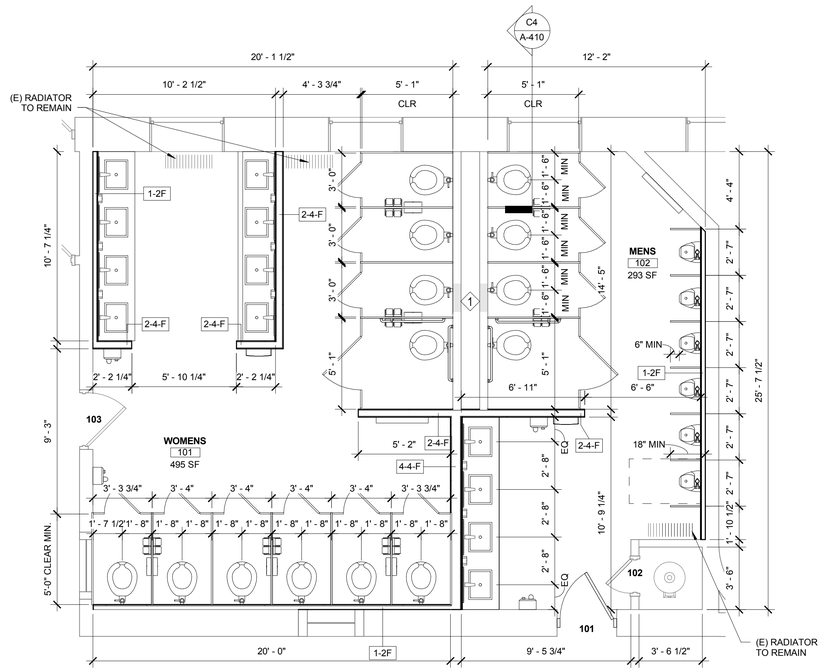
DOOR SCHEDULE

DOOR #	ROOM NAME	OPENING WIDTH	OPENING HEIGHT	DOOR TYPE	DOOR MATERIAL	FRAME TYPE	FRAME MATERIAL	DOOR REPAIR LEVEL	COMMENTS
101	MENS	3' - 0"	7' - 0"	Stile and Rail	Wood	A	Wood	N/A	Provide new door in existing wood frame. Provide door profile to match existing Womens Room toilet door.
102	UTILITY CLOSET	1' - 11"	6' - 7"	Existing	Wood	Existing	Wood	1	Existing to Remain
103	WOMENS	3' - 0"	7' - 0"	Existing	Wood	Existing	Wood	1	Existing to Remain

DOOR REPAIR LEVELS:
REPAIR LEVEL #1:
LIGHY SAND AND REPAIR SCUFF AND MARKS RE-STAIN TO MATCH EXISTING.
REMOVE AND CLEAN HARDWARE, ENSURE SMOOTH OPERATION OF HARDWARE.



A2 DOOR TYPES
1/2" = 1'-0"



A4 ENLARGED RESTROOM PLAN
1/4" = 1'-0"

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ENLARGED RESTROOM PLAN & DOOR SCHEDULE

A-410

SHEET OF

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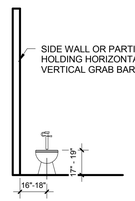
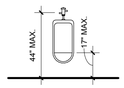
TYPICAL ADULT MOUNTING HEIGHTS

WATER CLOSET



RE: ENLARGED PLAN FOR HORIZONTAL PLACEMENT.

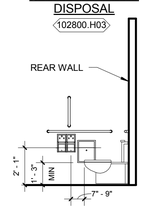
URINAL



RE: ENLARGED PLAN FOR HORIZONTAL PLACEMENT.

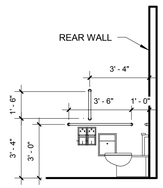
TOILET PAPER DISPENSER
102800.A03

SANITARY NAPKIN DISPOSAL
102800.H03



SURFACE MOUNT TOILET TISSUE DISPENSER 7" MIN. TO 9" MAX IN FRONT OF WC MEASURED TO THE CENTER LINE OF THE DISPENSER.

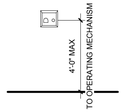
42" HORIZONTAL GRAB BAR
18" VERTICAL GRAB BAR



SIDE WALL:
42" MIN. LENGTH, MOUNT 12" MAX. FROM REAR WALL.

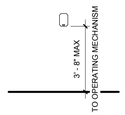
18" MIN. VERTICAL BAR: MOUNT 40" FROM REAR WALL AND 40" (FROM BOTTOM OF BAR) A.F.F.

ELECTRIC HAND DRYER
102800.P01



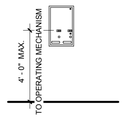
MOUNT 48" TO OPERATING MECHANISM FOR FRONT APPROACH.

SOAP DISPENSER
102800.F01



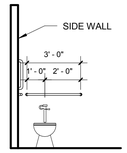
MOUNT 44" MAX TO OPERATING MECHANISM FOR FRONT APPROACH.

SANITARY NAPKIN DISPENSER
102800.H02



MOUNT 48" TO OPERATING MECHANISM FOR FRONT APPROACH.

36" HORIZ. GRAB BAR



REAR WALL:
36" MIN. LENGTH, EXTEND FROM CENTER LINE OF WC 12" MIN. ON SIDE CLOSEST TO WALL & 24" MIN. ON TRANSFER SIDE.

RESTROOM FINISH LEGEND

TILE

T1	PORCELAIN FLOOR TILE MANU: CONCEPT SURFACES PROD: MAXXI COLOR: FIVE SIZE: 12' X 24"	T3	ACCENT GLAZED WALL TILE MANU: EMSER PROD: VOGUE COLOR: GRAY, MATTE SIZE: 4" X 16"
T2	O.A. GLAZED WALL TILE MANU: EMSER PROD: VOGUE COLOR: WHITE, MATTE SIZE: 4" X 16"	T4	GLASS MOSAIC TILE MANU: CAPCO PROD: BLISS LINEAR BLEND COLOR: WATERFALL SIZE: 12' X 12" SHEETS

PAINT

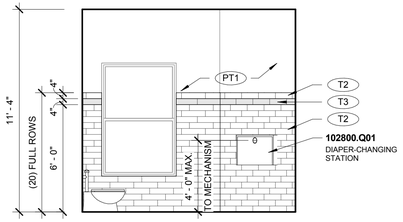
PT1	WALL COLOR MANU: SHERWIN WILLIAMS COLOR: 7016 MINDFUL GRAY SHEEN: EGGSHELL
PT2	O.A. CEILING COLOR MANU: TO MATCH (E) COLOR: TO MATCH (E) SHEEN: FLAT

PLASTIC PLAMINATE

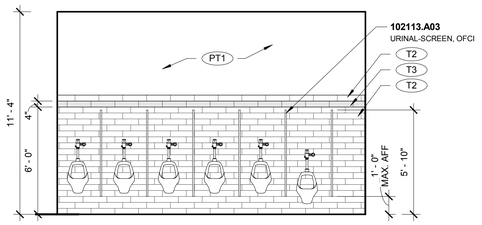
PL1	APRON @ SINK MANU: FORMICA PATTERN: 8829-58 GRAPHITE TWILL FINISH: MATTE

SOLID SURFACE

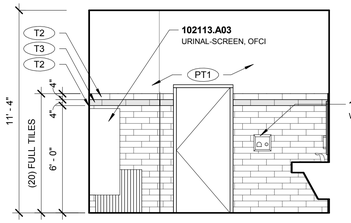
SS1	QUARTZ COUTNERTOP MANU: CAMBRIA PRODUCT: DURHAM THICK: 3CM



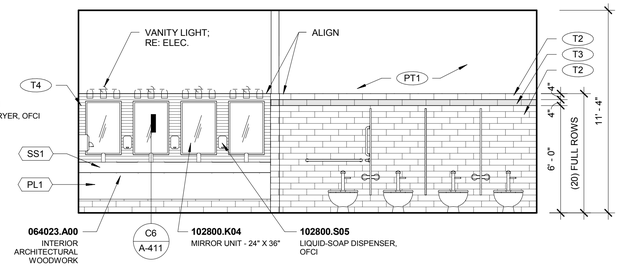
D3 MENS WEST ELEVATION
1/4" = 1'-0"



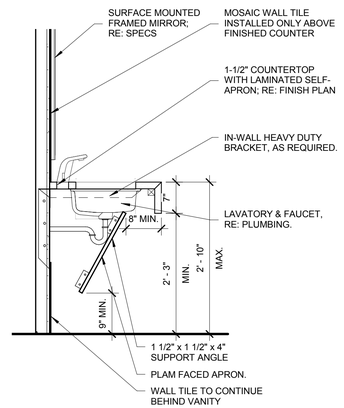
D4 MENS NORTH ELEVATION
1/4" = 1'-0"



C3 MENS EAST ELEVATIONS
1/4" = 1'-0"



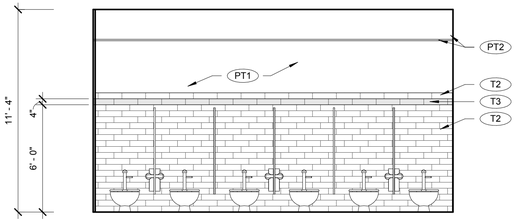
C4 MENS SOUTH ELEVATION
1/4" = 1'-0"



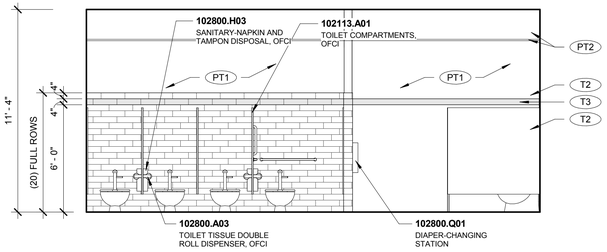
C6 SECTION @ VANITY
3/4" = 1'-0"

RESTROOM GENERAL NOTES

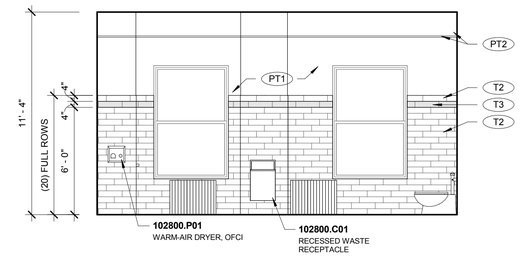
1. ALL 'HOLD' AND 'MIN' DIMENSIONS TAKE PRECEDENT OVER OTHER DIMENSIONS. IF THERE IS A DESCREPENCY, NOTIFY THE ARCHITECT.
2. INTERIOR WALL PARTITION DIMENSIONS SHOWN ARE TO FACE OF FINISHED MATERIAL U.N.O.
3. ALL FLOOR MATERIALS TO BE BUTT JOINTED AT TRANSITIONS ON CENTER OF DOOR WHERE APPLICABLE.
4. PROVIDE *SCHLUTER SYSTEMS* EDGE PROTECTION AND TRANSITION PROFILES AT ALL OUTSIDE CORNERS, AND WHERE MATERIAL CHANGES AND/OR STOPS.
5. PAINT ALL EXPOSED PIPES, AIR GRILLES, ETC. TO MATCH ADJACENT WALL COLOR
6. ALL WALL MOUNTED CASEWORK, MILLWORK, HARDWARE, EQUIPMENT, ETC. SHALL BE ANCHORED TO METAL STRAPPING OR 3/4" FRT PLYWOOD BACKING BETWEEN STUDS, U.N.O. COORDINATE ACCORDINGLY.
7. ALL TILE TYPES AND PAINT COLORS TO WRAP AROUND OUTSIDE CORNERS AND TERMINATE AT INSIDE CORNERS, TYP.



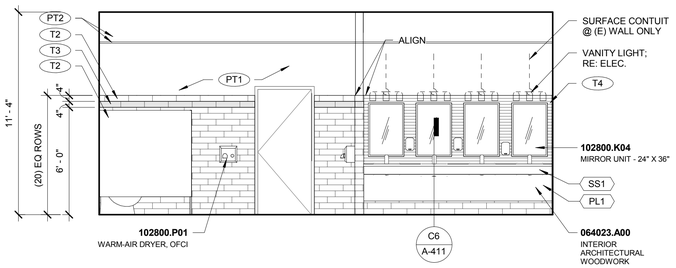
B1 WOMENS EAST ELEVATION
1/4" = 1'-0"



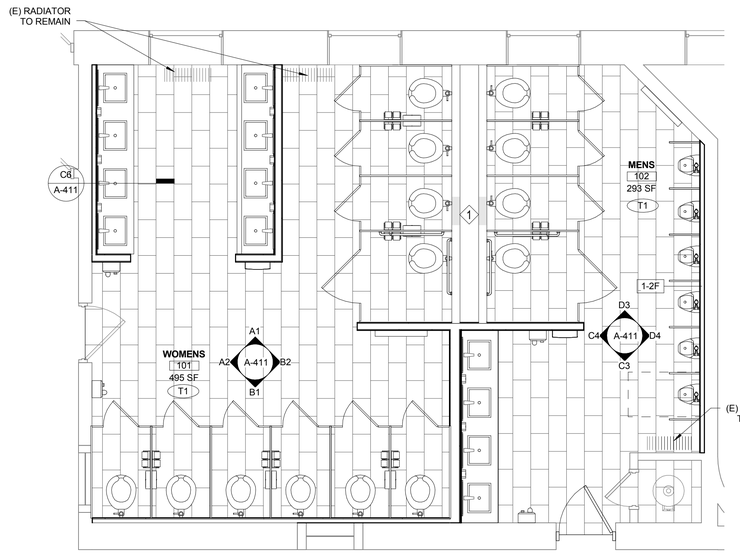
B2 WOMENS NORTH ELEVATION
1/4" = 1'-0"



A1 WOMENS WEST ELEVATION
1/4" = 1'-0"



A2 WOMENS SOUTH ELEVATION
1/4" = 1'-0"



A4 RESTROOM FINISH PLAN
1/4" = 1'-0"

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CS AUDITORIUM RESTROOM RENOVATION

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OWNER:

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ISSUE:

10/16/15	ISSUED FOR BIDDING AND CONSTRUCTION

DRAWING INFORMATION:

PROJECT NO:	11503.000
DRAWN BY:	K Myron-Karels
CHECKED BY:	J Reske
APPROVED BY:	G Petri

SHEET TITLE:

RESTROOM FINISH PLAN

A-411

SHEET OF

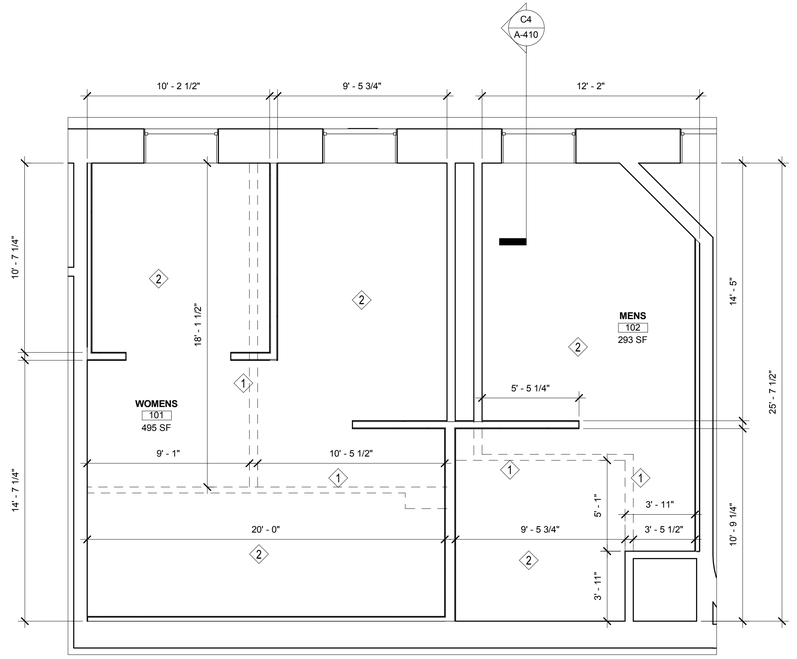
REFLECTED CEILING PLAN GENERAL NOTES

1. GENERAL CONTRACTOR TO COORDINATE SCHEDULING ALL WORK WITH OWNER.
2. GENERAL CONTRACTOR TO VERIFY IN FIELD ALL DIMENSIONS AND EXISTING DIMENSIONS PRIOR TO COMMENCEMENT OF WORK. NOTIFY ARCHITECT IF DISCREPANCIES OCCUR.
3. PROTECT ALL EXISTING TO REMAIN FROM DAMAGE DURING DEMOLITION AND CONSTRUCTION.
5. DO NOT SCALE DRAWINGS; NOTIFY ARCHITECT IF CRITICAL DIMENSIONS DO NOT APPEAR ON THE DRAWINGS.
6. NOT ALL KEY NOTES ARE USED ON ALL SHEETS.

ENLARGED RCP KEYNOTES

1 PATCH PAINT PLASTER CEILING WHERE PREVIOUS PARTITION WAS REMOVED.

2 PATCH AREAS IN (E) PLASTER CEILING WHERE PREVIOUS MECHANICAL, ELECTRICAL AND CEILING FIXTURES WERE ATTACHED TO THE PLASTER.



A4 RESTROOM ENLARGEMENT RCP
1/4" = 1'-0"

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DRAWING INFORMATION:

PROJECT NO:	11503.000
DRAWN BY:	G Lee
CHECKED BY:	J Reske
APPROVED BY:	G Petri

SHEET TITLE:

RESTROOM ENLARGED RCP

A-421

SHEET OF

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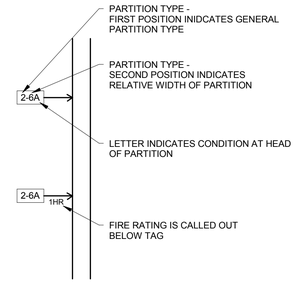
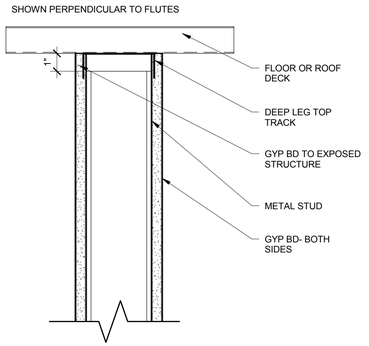
PARTITION TYPES LEGEND



PARTITION TYPES NOTES

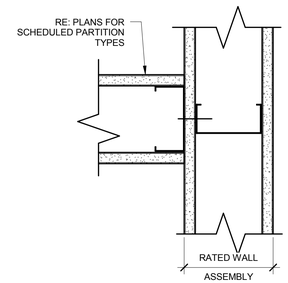
1. PARTITION TYPES ARE INDICATED ON THE FLOOR PLANS.
2. ALL PARTITIONS SHALL EXTEND STRUCTURE TO STRUCTURE UNLESS NOTED OTHERWISE.
5. PROVIDE FIRE-RETARDANT TREATED WOOD BLOCKING FOR PARTITION MOUNTED EQUIPMENT AND CASEWORK.
6. PARTITION TYPES DESCRIBE THE PRIMARY MEMBER AND SHEATHING. REFER TO FINISH SCHEDULE FOR ALL PARTITION FINISH DESIGNATIONS.
7. PROVIDE TYPE 'WR' WATER RESISTANT GYP. BD. IN ALL WET AREAS SUCH AS TOILET, LOCKER, AND SHOWER ROOMS. PROVIDE 5/8" CONCRETE BACKER BOARD AT ALL CERAMIC TILE FINISHES TO ALIGN WITH 5/8" TYPE 'WR' GYP. BD. ABOVE.
8. PROVIDE SLIP JOINT CONNECTIONS AT THE TOPS OF ALL PARTITIONS WHICH INTERSECT THE STRUCTURE ABOVE.



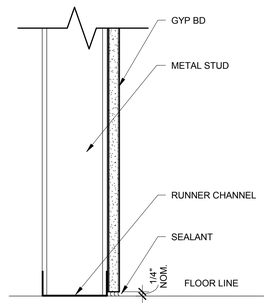
NON-RATED PARTITION HEAD

---F

SEE GENERAL PARTITION TYPE FOR REQUIRED STUD SIZE AND LAYERS OF GYP. BD. (2 LAYERS SHOWN)



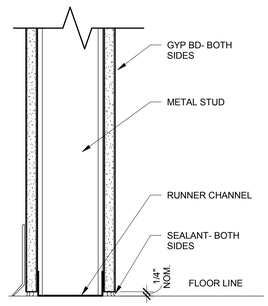
PLAN DETAIL @ PARTITION INTERSECTION



PARTITION

1-2-

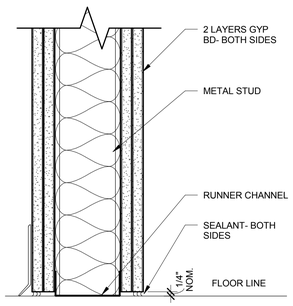
WITH 2-1/2" METAL STUD
PARTITION WIDTH = 3-1/8"



PARTITION

2-4-

WITH 4" METAL STUD
PARTITION WIDTH = 5-1/4"



PARTITION

4-4-

WITH 4" METAL STUD
PARTITION WIDTH = 6-1/2"

A3 PARTITION TYPES

3" = 1'-0"

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DRAWING INFORMATION:

PROJECT NO:	11503.000
DRAWN BY:	G Lee
CHECKED BY:	J Reske
APPROVED BY:	G Petri

SHEET TITLE:

PARTITION DETAILS

A-500

SHEET OF

ELECTRICAL GENERAL NOTES - APPLICABLE TO ALL ELECTRICAL SHEETS

1. PRIOR TO SUBMITTING BIDS THE ELECTRICAL CONTRACTOR SHALL VISIT THE SITE TO VERIFY EXISTING ELECTRICAL EQUIPMENT CONDITIONS AND DIFFICULTIES THAT WILL AFFECT EXECUTION OF THE WORK. FIELD VERIFY QUANTITIES OF EXISTING LIGHT FIXTURES, ELECTRICAL DEVICES, COMMUNICATION DEVICES, FIRE ALARM DEVICES, AND ELECTRICAL EQUIPMENT. NOTIFY THE ARCHITECT AND ENGINEER OF ANY EXISTING CONDITIONS WHICH MODIFY THE SCOPE OF WORK AS SHOWN ON THE CONSTRUCTION DOCUMENTS. SUBMISSION OF A BID PROPOSAL WILL BE CONSTRUED AS EVIDENCE THAT SUCH AN EXAMINATION HAS BEEN MADE AND LATER CLAIMS FOR MOBILIZATION, LABOR, EQUIPMENT, AND/OR MATERIALS REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED WILL NOT BE RECOGNIZED.

2. THE ELECTRICAL CONTRACTOR SHALL EXAMINE THE DRAWINGS OF ALL TRADES WHOSE WORK RELATES TO OR IS DEPENDENT ON ELECTRICAL WORK TO BECOME FULLY INFORMED OF THE EXTENT AND CHARACTER OF THEIR SPECIFIED WORK AND BE ABLE TO COORDINATE IT WHILE AVOIDING POSSIBLE INTERFERENCE WITH THE ELECTRICAL WORK.

3. IT IS THE INTENTION OF THESE SPECIFICATIONS AND DRAWINGS TO CALL FOR FINISHED WORK, TESTED AND READY FOR OPERATION. WHEREVER THE WORD "PROVIDE" IS USED, IT SHALL MEAN "FURNISH AND INSTALL COMPLETE AND READY FOR USE." "REPLACE" SHALL MEAN TO PUT NEW IN PLACE OF EXISTING. THE ARCHITECTURAL GENERAL AND SPECIAL CONDITIONS FOR THE WORK OF THIS PROJECT AND BASE BUILDING SPECIFICATIONS SHALL BE PART OF THE ELECTRICAL SPECIFICATIONS. THE ELECTRICAL CONTRACTOR SHALL EXAMINE THE GENERAL AND SPECIAL CONDITIONS BEFORE SUBMITTING A BID.

4. ALONGSIDE SUBMISSION OF THE BID, THE ELECTRICAL CONTRACTOR SHALL GIVE WRITTEN NOTICE TO THE ARCHITECT/ENGINEER OF ANY NECESSARY ITEMS OR WORK THAT HAVE BEEN OMITTED FROM THE DRAWINGS OR SPECIFICATIONS. IN THE ABSENCE OF SUCH WRITTEN NOTICE, IT IS MUTUALLY AGREED THAT THE ELECTRICAL CONTRACTOR HAS INCLUDED THE COST OF ALL REQUIRED ITEMS IN HIS BID, AND THAT THE ELECTRICAL CONTRACTOR WILL BE RESPONSIBLE FOR THE APPROVED SATISFACTORY FUNCTIONING OF THE ENTIRE SYSTEM WITHOUT EXTRA COMPENSATION.

5. THE CONTRACTOR IS RESPONSIBLE FOR THE COMPLETE AND SATISFACTORY ELECTRICAL INSTALLATION IN ACCORDANCE WITH THE TRUE INTENT OF THE DRAWINGS AND SPECIFICATIONS. HE SHALL PROVIDE, WITHOUT EXTRA CHARGE, ALL INCIDENTAL ITEMS REQUIRED, AS A PART OF THIS ELECTRICAL INSTALLATION. THE INSTALLATION SHALL BE SO MADE THAT ITS SEVERAL COMPONENT PARTS WILL FUNCTION TOGETHER AS A WORKABLE SYSTEM AND SHALL BE LEFT WITH ALL PARTS ADJUSTED AND IN WORKING ORDER.

6. ELECTRICAL CONTRACTOR SHALL OBTAIN AND PAY FOR ALL LOCAL FEES, PERMITS, AND SERVICES OF INSPECTION AUTHORITIES REQUIRED BY ELECTRICAL WORK FOR THIS ELECTRICAL CONSTRUCTION. FILE ALL NECESSARY PLANS, PREPARE ALL DOCUMENTS, AND OBTAIN ALL NECESSARY APPROVALS REQUIRED BY ALL GOVERNMENTAL DEPARTMENTS HAVING JURISDICTION. ALL WORK PERFORMED UNDER THIS CONTRACT SHALL REMAIN EXPOSED TO VIEW UNTIL APPROVED BY THE INSPECTION AUTHORITY.

7. ELECTRICAL CONTRACTOR SHALL FULLY COORDINATE WITH OWNER REPRESENTATIVES. ALL ELECTRICAL WORK PERFORMED UNDER THIS CONTRACT SHALL CONFORM WITH LATEST EDITIONS OF THE NATIONAL ELECTRICAL CODE, INTERNATIONAL BUILDING CODE, LOCAL BUILDING AND FIRE DEPARTMENT REQUIREMENTS. PERFORM WORK IN ACCORDANCE WITH REQUIREMENTS OF OWNER REPRESENTATIVE.

8. ELECTRICAL CONTRACTOR SHALL NOTIFY THE ARCHITECT AND ENGINEER OF ANY CHANGES REQUIRED BY THE BUILDING MANAGEMENT AND TENANT REPRESENTATIVES.

9. BEFORE STARTING WORK, ELECTRICAL CONTRACTOR SHALL PREPARE AND SUBMIT TO THE ARCHITECT/ENGINEER FIVE (5) SETS OF SHOP DRAWINGS, BROCHURES, INSTALLATION INSTRUCTIONS, AND DESCRIPTIVE EQUIPMENT DATA RELATED TO SPECIFIED EQUIPMENT, WIRING DEVICES, AND ACCESSORIES FOR APPROVAL. ELECTRONIC SUBMITTALS (PDF OR SIMILAR) ARE ACCEPTABLE WITH PRIOR APPROVAL FROM THE ARCHITECT. THE CONTRACTOR SHALL IDENTIFY ANY "LONG LEAD TIME" ITEMS WHICH MAY IMPACT THE OVERALL PROJECT SCHEDULE. ALL BIDS SHALL INCLUDE COSTS ASSOCIATED WITH THE PURCHASE AND DELIVERY OF EQUIPMENT TO MEET THE PROJECT SCHEDULE. NO EQUIPMENT SHALL BE ORDERED, PURCHASED, OR INSTALLED PRIOR TO THE APPROVAL OF SHOP DRAWINGS, BROCHURES, INSTALLATION INSTRUCTIONS, AND SCHEDULES. APPROVAL BY THE ARCHITECT/ENGINEER IS INTENDED TO ESTABLISH CONFORMANCE WITH THE PROJECT DESIGN CONCEPT AND THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS.

10. THE NAMING OF THE MANUFACTURER OR BRAND WITH CATALOG NUMBER OR OTHER PRODUCT IDENTIFICATION WITHOUT THE WORDS "OR EQUAL" IN THE SPECIFICATIONS OR NOTES SHALL INDICATE THAT IT IS THE ONLY PRODUCT APPROVED FOR PURCHASE. IF THE WORDS "OR EQUAL" ARE USED THEY SHALL BE INTERPRETED AS ESTABLISHING A QUALITY OR PERFORMANCE STANDARD FOR THE MATERIAL OR PRODUCT TO BE PURCHASED. THIS SHALL INDICATE THAT THE ELECTRICAL CONTRACTOR IS NOT RESTRICTED TO THE USE OF THE NAMED AND IDENTIFIED PRODUCT IF A SUBSTITUTE APPROVED BY THE ARCHITECT/ENGINEER IS AVAILABLE. HOWEVER, WHERE A SUBSTITUTION IS REQUESTED, IT WILL BE PERMITTED ONLY WITH THE WRITTEN APPROVAL OF THE ARCHITECT/ENGINEER. NO SUBSTITUTE MATERIAL OR PRODUCT SHALL BE ORDERED, FABRICATED, SHIPPED OR PROCESSED IN ANY MATTER PRIOR TO THE APPROVAL OF THE ARCHITECT/ENGINEER. THE ELECTRICAL CONTRACTOR SHALL ASSUME ALL RESPONSIBILITY FOR ADDITIONAL EXPENSES AS REQUIRED MAKING CHANGES FROM THE ORIGINAL MATERIAL OR PRODUCT SPECIFIED.

11. THE ELECTRICAL DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL ARRANGEMENT OF ELECTRICAL WORK. LOCATIONS ARE APPROXIMATE AND SHALL BE SUBJECT TO MINOR MODIFICATIONS AS DIRECTED BY THE GENERAL CONTRACTOR AND OWNER REPRESENTATIVES. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE EXACT FITTING OF ALL MATERIALS, EQUIPMENT, ETC., IN THE BUILDING AND TENANT SPACE. ALL DIMENSIONS SHALL BE VERIFIED ON THE JOB.

12. DRAWINGS SHALL NOT BE SCALED FOR ROUGH-IN MEASUREMENTS OR USED AS SHOP DRAWINGS, WHERE DIMENSIONS ARE SHOWN ON PLANS OR DETAILS, THESE DIMENSIONS ARE TO BE FIELD-VERIFIED BY THE ELECTRICAL CONTRACTOR AGAINST EXISTING FIELD CONDITIONS, INSTALLATION REQUIREMENTS OF OTHER TRADES, AND THE MANUFACTURER'S SUBMITTALS FOR EQUIPMENT TO BE INSTALLED. SHOULD ANY CONFLICTS ARISE WHICH CANNOT BE EASILY RESOLVED IN THE FIELD WITHOUT CHANGING THE DESIGN INTENT, THE ELECTRICAL CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY.

13. WHILE ALL WORK IS IN PROGRESS, EXCEPT FOR SHORT DESIGNATED INTERVALS DURING WHICH CONNECTIONS ARE TO BE MADE, CONTINUITY OF SERVICE TO ALL EXISTING SYSTEMS SERVING OCCUPIED SPACES SHALL BE MAINTAINED. THE CONTRACTOR SHALL COORDINATE AND COOPERATE WITH OWNER AT ALL TIMES FOR ALL NEW-TO-EXISTING CONNECTIONS, SYSTEM SHUTDOWNS, AND RESTART-UP.

14. ANY WORK WHICH WILL AFFECT THE BUILDING OCCUPANTS, INCLUDING, BUT NOT LIMITED TO WORK WHICH GENERATES EXCESSIVE NOISE, DUST, SMOKE, OR INCONVENIENCE TO BUILDING OCCUPANTS, SHALL BE PERFORMED AFTER BUSINESS HOURS. UNLESS PRIOR APPROVAL HAS BEEN OBTAINED FROM THE BUILDING MANAGER OR OWNER.

15. ELECTRICAL ITEMS AFFECTED BY REMODEL WORK ARE SHOWN ON DRAWINGS ALONG WITH EXISTING ELECTRICAL INSTALLATION SHOWN WITH LIGHT LINE WEIGHT. EXISTING ELECTRICAL INSTALLATION SHOWN IS NOT NECESSARILY ALL-INCLUSIVE. RETAIN CIRCUIT CONTINUITY FOR EXISTING ELECTRICAL EQUIPMENT, FIXTURES, AND DEVICES THAT ARE TO REMAIN. SUCH EQUIPMENT SHALL BE RECONNECTED TO EXISTING CIRCUITS OR CONNECTED TO NEW CIRCUIT(S) AS INDICATED ON DRAWINGS. ENSURE ALL ELECTRICAL DEVICES IN WORK AREA ARE FULLY FUNCTIONAL. FOR DEVICES OR JUNCTION BOXES LOCATED IN WALLS, THAT MUST REMAIN IN PLACE FOR CIRCUIT CONTINUITY, PROVIDE BLANK COVER PLATES TO MATCH WALL PLATES STYLE IN THE AREA OF WORK. FOR ALL OTHER UNUSED JUNCTION BOXES, REMOVE WIRING AND PROVIDE BLANK COVER PLATE, OR COORDINATE WITH GENERAL CONTRACTOR FOR PATCHING OF WALL TO MATCH ADJACENT SURFACE AS DIRECTED BY ARCHITECT. W HERE EXISTING DEVICES CONFLICT WITH NEW WALL CONSTRUCTION, RELOCATE EXISTING DEVICE AND REWORK CIRCUITRY AS REQUIRED TO MAINTAIN CIRCUIT CONTINUITY. DEVICES MAY ONLY BE REMOVED WITH PRIOR APPROVAL FROM THE DESIGN TEAM AND BUILDING MANAGEMENT. COORDINATE FINAL DIRECTIONS WITH ARCHITECT PRIOR TO DEMOLITION.

16. REPORT ANY EXISTING DAMAGED EQUIPMENT OR SYSTEMS TO THE OWNER PRIOR TO BEGINNING THE PROJECT.

17. BEFORE ANY EQUIPMENT IS INSTALLED, DETERMINE THAT SAID EQUIPMENT WILL PROPERLY FIT WITHIN THE SPACE ALLOCATED. INSTALL ALL EQUIPMENT AND MATERIALS IN SUCH A MANNER AS TO PROVIDE REQUIRED ACCESS FOR SERVICING AND MAINTENANCE. ALLOW AMPLE SPACE FOR REMOVAL OF ALL PARTS THAT REQUIRE REPLACEMENT OR SERVICING.

18. MINIMUM WORKING CLEARANCES PER THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE SHALL BE PROVIDED AROUND AND IN FRONT OF ALL ELECTRICAL EQUIPMENT .

19. ALL CIRCUIT BREAKER LUGS SHALL BE RATED FOR A MINIMUM OF 75 DEGREES CELSIUS.

20. ALL MATERIALS AND EQUIPMENT SHALL BE NEW, UNDAMAGED, BEAR THE UL LABEL WHERE APPLICABLE, AND BE AS SPECIFIED FOR USE IN EACH SPECIFIC LOCATION. ANY INCIDENTAL ACCESSORIES NECESSARY TO COMPLETE THE WORK IN ALL RESPECTS AND MAKE IT READY FOR OPERATION, EVEN IF NOT SPECIFICALLY SPECIFIED, SHALL BE FURNISHED, DELIVERED, AND INSTALLED BY THE ELECTRICAL CONTRACTOR WITHOUT ADDITIONAL EXPENSE TO THE CLIENT.

21. MINOR DETAILS NOT USUALLY SHOWN OR SPECIFIED, BUT NECESSARY FOR THE PROPER INSTALLATION AND OPERATION OF A SYSTEM OR EQUIPMENT, SHALL BE INCLUDED IN THE ELECTRICAL CONTRACTOR'S ESTIMATE, AS IF SPECIFIED HEREIN OR SHOWN.

22. ALL NEW, RELOCATED AND EXISTING MATERIALS, IN CEILING PLENUMS NOT ENCLOSED IN CONDUIT SHALL HAVE CLASS, FLAME SPREAD AND SMOKE DEVELOPMENT RATINGS AS REQUIRED FOR USE IN OPEN PLENUMS. REMOVE AND REPLACE ALL EXISTING MATERIALS IN WORK AREA NOT IN COMPLIANCE.

23. COORDINATE THE INSTALLATION OF ELECTRICAL MATERIALS AND EQUIPMENT ABOVE AND BELOW CEILINGS WITH SUSPENSION SYSTEM, MECHANICAL EQUIPMENT, AND OTHER BUILDING COMPONENTS. ALL COMPONENTS SHALL BE LOCATED AS TIGHT TO STRUCTURE AS POSSIBLE. COORDINATE CEILING CAVITY SPACE CAREFULLY WITH ALL TRADES.

24. NEUTRALS, RACEWAYS, AND NON-CURRENT CARRYING PARTS OF ELECTRICAL EQUIPMENT AND ASSOCIATED ENCLOSURES SHALL BE GROUNDED IN FULL ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE. PROVIDE HARD WIRE GROUND CONNECTIONS TO ALL DEVICES AND SEPARATE, CONTINUOUS, INSULATED GROUND WIRE IN EACH CIRCUIT (#12 CU MINIMUM "GREEN" TRACER GROUND). COORDINATE EQUIPMENT GROUNDING CONDUCTOR WIRE SIZE WITH MANUFACTURER REQUIREMENTS.

25. CONDUIT JOINTS SHALL BE CUT SQUARE, THREADED, REAMED SMOOTH, AND DRAWN UP TIGHT. BENDS OR OFFSETS SHALL BE MADE WITH AN APPROVED BENDER OR HICKEY, OR HUB-TYPE CONDUIT FITTINGS. THE NUMBER OF BENDS PER RUN SHALL CONFORM TO THOSE STATED IN CURRENT NEC.

26. WHERE POSSIBLE ALL WIRING SHALL BE RUN CONCEALED. ALL HOME RUNS SHALL BE EMT. CONCEALED CONDUIT SYSTEMS SHALL BE RUN IN A DIRECT LINE WITH LONG SWEEP BENDS AND AND OFFSETS. EXPOSED CONDUIT RUNS SHALL BE PARALLEL TO AND AT RIGHT ANGLES TO BUILDING LINES, USING CONDUIT FITTINGS FOR ALL TURNS AND OFFSETS. ALL EMPTY CONDUITS SHALL BE SUPPLIED WITH PULL WIRES AND BUSHINGS.

27. "MC" AND "AC" TYPE CABLE WITH INTERNAL GROUND WIRES SHALL BE PERMITTED FOR BRANCH CIRCUIT WIRING WHERE APPROVED IN WRITING BY BUILDING MANAGEMENT AND THE LOCAL AHJ ONLY AND INSTALLED PER NATIONAL ELECTRICAL CODE AND LOCAL BUILDING DEPARTMENT REQUIREMENTS. USE LISTED AND APPROVED TYPE COUPLINGS AND CONNECTORS. PROVIDE CONDUIT SUPPORTS AS REQUIRED BY THE NATIONAL ELECTRICAL CODE AS A MINIMUM.

28. ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL JUNCTION AND PULL BOXES TO PROVIDE ACCESS POINTS FOR PULLING AND FEEDING CONDUCTORS INTO A RACEWAY SYSTEM. JUNCTION AND PULL BOXES AND THEIR COVERS SHALL BE FORMED FROM SHEET STEEL AND SHALL BE FINISHED IN GRAY ENAMEL PAINT. BOXES SHALL BE IN INDUSTRY STANDARD SIZES. OUTLET BOXES WITH THE CORRECT FITTING FOR THE APPLICATION SHALL BE LOCATED AT EACH CONDUCTOR SPLICE POINT, AT EACH OUTLET, SWITCH POINT, OR JUNCTION POINT, AND AT EACH PULL POINT FOR THE CONNECTION OF CONDUIT AND OTHER RACEWAYS. OUTLET BOXES FOR CONCEALED WIRING SHALL BE MADE FROM GALVANIZED OR CADMIUM-PLATED SHEET STEEL, AND THEY SHALL HAVE A DEPTH OF AT LEAST 1.5 INCHES, WHETHER SINGLE OR GANGED. THE BOXES SHALL BE LARGE ENOUGH SIZE TO ACCOMMODATE THE NUMBER OF WIRING DEVICES AND CONDUCTORS AS SPECIFIED IN THE FILL SCHEDULE OF THE CURRENT NEC. SECURE BOXES WITH MOUNTING BRACKET, BRACES, HANGER OR BOX MOUNTING SUPPORT.

29. ALL NEW SWITCHES, POWER OUTLETS, TELEPHONE OUTLETS, FIRE ALARM DEVICES, AND COMMUNICATIONS OUTLETS SHALL MEET THE REQUIREMENTS FOR AMERICANS WITH DISABILITIES (A.D.A) MOUNTING HEIGHTS AND ORIENTATIONS, TYPICAL UNLESS OTHERWISE NOTED. RECEPTACLES SHALL BE A MINIMUM OF 15" A.F.F. AND SWITCHES A MAXIMUM OF 48" A.F.F. TO CENTERLINE, TYPICAL UNLESS OTHERWISE NOTED .

30. ALL WALL MOUNTED OUTLETS SHALL BE OFFSET SO THEY ARE NOT BACK TO BACK, FOR SOUND TRANSMISSION PURPOSES. A HORIZONTAL DISTANCE OF AT LEAST 6 INCHES SHALL SEPARATE OUTLET BOXES ON OPPOSITE SIDES OF WALLS AND PARTITIONS. MOUNT ELECTRICAL AND COMMUNICATIONS OUTLETS ON WALLS AS CLOSE TOGETHER AS POSSIBLE.

31. WIRING DEVICES SHALL BE SPECIFICATION GRADE. MINIMUM DEVICE RATING SHALL BE 20 AMPS FOR ALL WIRING DEVICES UNLESS SPECIFICALLY NOTED OTHERWISE. DEVICES WITH DEDICATED CIRCUITS SHALL BE RATED AS REQUIRED BY CIRCUIT LOAD. ISOLATED GROUND RECEPTACLES SHALL BE ORANGE. MATCH COLOR AND TYPE TO EXISTING BUILDING STANDARD. PROVIDE MATCHING NYLON COVER PLATES FOR ALL OUTLETS. ELECTRICAL CONTRACTOR SHALL VERIFY ALL OUTLETS WITH ARCHITECTURAL PLANS AND TENANT BEFORE ORDERING AND PURCHASING OF MATERIALS.

32. FIRE RESISTIVE WALLS AND PARTITIONS MAY HAVE OPENINGS FOR STEEL ELECTRICAL OUTLET BOXES NOT EXCEEDING 16 SQUARE INCHES IN AREA, PROVIDED THE AGGREGATE AREA OF SUCH OPENINGS IS NOT MORE WITH THAN 100 SQUARE INCHES FOR ANY 100 SQUARE FEET OF WALL. A HORIZONTAL DISTANCE OF AT LEAST 24 INCHES SHALL SEPARATE OUTLET BOXES ON OPPOSITE SIDES OF FIRE RESISTIVE WALLS AND PARTITIONS.

33. ALL JUNCTION BOX COVERS SHALL BE INDELIBLY LABELED WITH PANEL DESIGNATION AND BRANCH CIRCUIT NUMBER OF EACH WIRE WITHIN THE JUNCTION BOX.

34. ALL WIRING SHALL BE COPPER, TYPE THHN OR THWN INSULATION, UNLESS SPECIFICALLY NOTED OTHERWISE. MINIMUM SIZE SHALL BE #12 AWG. CONDUCTORS SHALL BE FACTORY COLOR-CODED WITH WIRE COLOR CODING AS REQUIRED BY THE NATIONAL ELECTRICAL CODE AND USING STANDARD CONDUCTOR COLOR CODES:

120/208 VOLTS:	277/480 VOLTS:
A: BLACK	A: BROWN
B: RED	B: ORANGE
C: BLUE	C: YELLOW
NEU: WHITE	NEU: GRAY
GND: GREEN	GND: GREEN
ISO. G: GREEN W/YELLOW STRIPE	

35. ALL JOINTS OR SPLICES FOR 10 AWG. CONDUCTORS OR SMALLER SHALL BE MADE WITH UL-APPROVED WIRE NUTS, OR COMPRESSION-TYPE CONNECTORS.

36. ALL JOINTS OR SPLICES FOR CONDUCTORS 8 AWG AND LARGER SHALL BE MADE WITH A MECHANICAL COMPRESSION OR BOLTED CONNECTOR. AFTER THE CONDUCTORS HAVE BEEN MADE MECHANICALLY AND ELECTRICALLY SECURE, THE ENTIRE JOINT OR SPLICE SHALL BE COVERED WITH 3M SCOTCH BRAND NO. 33 TAPE OR APPROVED EQUAL, TO MAKE THE INSULATION VALUE AT THE JOINT OR SPLICE EQUAL TO THE VALUE OF THE CONDUCTOR INSULATION. ALL CONNECTORS SHALL BE UL APPROVED.

37. ALL NEW MULTI-WIRE BRANCH CIRCUITS SHALL INCLUDE SEPARATE NEUTRAL CONDUCTORS OR BREAKER TIES AS REQUIRED BY CURRENT NEC SECTION 210.4 (B).

38. VOLTAGE DROP: THE ELECTRICAL CONTRACTOR SHALL ENSURE THAT VOLTAGE DROP FOR FEEDERS TO DISTRIBUTION EQUIPMENT DOES NOT EXCEED 2% AND VOLTAGE DROP IN BRANCH CIRCUITING DOES NOT EXCEED 3% FOR OVERALL VOLTAGE DROP OF 5% (MAXIMUM). FEEDERS LISTED ON SCHEDULES AND THE ELECTRICAL ONE-LINE DIAGRAM ARE A BASE FEEDER/BRANCH CIRCUIT SIZE AND SHALL BE ADJUSTED AS NEEDED BASED ON ACTUAL LENGTHS OF CONDUCTORS.

39. ALL LIGHT FIXTURES SHALL BE SUPPORTED INDEPENDENTLY FROM STRUCTURE. REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATIONS OF LIGHT FIXTURES AND ELECTRICAL DEVICES.

40. FOR ALUMINUM CONDUCTOR TERMINATIONS, ALUMINUM BI-METALLIC PIN CONNECTORS ARE REQUIRED UNLESS COMPACT CONDUCTORS ARE USED. THESE CONNECTORS SHALL BE UL LISTED PER UL 486B AND RATED FOR USE UP TO 600V AND TEMPERATURE UP TO 90'C. CONNECTORS SHALL BE INSTALLED WITH MANUFACTURER'S SPECIFIED CRIMPING TOOLS AND DIES.

41. INSTALLATION IN AREAS OF DRYWALL CEILING SHALL BE COORDINATED SUCH THAT ACCESS PANELS ARE NOT REQUIRED. ELEMENTS REQUIRING ACCESS SHALL BE LOCATED IN THE AREAS OF ACCESSIBLE CEILING OR IN THE LOCATIONS COORDINATED WITH ARCHITECT. ACCESS PANELS REQUIRED WITHIN DRYWALL CEILINGS SHALL BE INSTALLED SYMMETRICALLY WITH OTHER PANELS OR DEVICES AND SHALL BE MINIMUM SIZE REQUIRED. "MUD-IN" TYPE, AND FIRE RATED, IF REQUIRED. ACCESS PANELS IN FIRE-RATED WALLS AND CEILINGS SHALL HAVE PROPER UL LABEL AND FIRE RATING LISTING.

42. WALL AND CEILING ROUGH-IN INSTALLATIONS FOR LOW-VOLTAGE CONTROL WIRING OF ANY TYPE SUCH AS DATA/TELECOMMUNICATIONS WIRING, FIRE ALARM WIRING, HVAC CONTROL WIRING, SECURITY SYSTEMS WIRING, TV CABLING, OPTICAL FIBER CABLING, ETC., SHALL BE COMPLETE AND READY FOR INSPECTION AT THE TIME ELECTRICAL ROUGH-IN INSPECTIONS ARE REQUESTED. ALL SHARP EDGES, CONDUIT ENDS AND METAL STUDS, ETC. FOR LOW-VOLTAGE CABLING SHALL BE PROTECTED BY INSULATED BUSHINGS OR GROMMETS AND SECURELY FASTENED IN THE OPENINGS FOR THE WALL ROUGHT-IN INSPECTIONS. WORK SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER (GROUPED CABLES ROUTED WITH SQUARE CORNERS AND PARALLEL TO BUILDING LINES.) CABLES SHALL BE INSTALLED PER NEC REQUIRED SEPARATIONS AND SUPPORTED FROM THE BUILDING STRUCTURE. CABLE TIES USED IN DUCTS, PLENUMS, AND OTHER AIR-HANDLING SPACES ARE REQUIRED TO HAVE A TESTING LABORATORY LISTING NUMBER AND LABEL ON EACH UNOPENED PACKAGE AS BEING APPROVED FOR USE IN THESE LOCATIONS.

43. COORDINATE MOUNTING HEIGHTS AND LOCATIONS OF ALL ELECTRICAL DEVICES LOCATED WITHIN, ABOVE, OR NEAR MILLWORK WITH ARCHITECTURAL DRAWINGS, APPROVED "SHOP DRAWINGS", AND MILLWORK CONTRACTOR. MAINTAIN CONSISTENT MOUNTING PRACTICES FOR A UNIFORM APPEARANCE. VERIFY ALL OUTLET REQUIREMENTS PRIOR TO ROUGH IN.

44. ELECTRICAL CONTRACTOR SHALL COORDINATE EXACT LOCATIONS OF LIGHTING FIXTURES IN MECHANICAL ROOMS/SPACES WITH MECHANICAL DUCT WORK INSTALLER PRIOR TO ROUGH IN. LOCATE BELOW DUCT WORK (8'-0" A.F.F. MIN.) CENTERED IN ROOM AS MUCH AS POSSIBLE.

45. ELECTRICAL CONTRACTOR SHALL COMPLY WITH NEC AND LOCAL CODES FOR CONDUIT FILL REQUIREMENTS DEPENDING ON WIRE SIZES, QUANTITY, AND CORRECTION FACTORS. COORDINATE WITH LOCAL AUTHORITY HAVING JURISDICTION IF UPGRADE OF THE EXISTING ELECTRICAL INSTALLATION IS REQUIRED. THIS UPGRADE MAY INCLUDE REPLACEMENT OF THE EXISTING CONDUITS AND WIRING AFFECTED BY SCOPE OF THIS PROJECT TO ACCOMMODATE CURRENT CODE CONDUIT FILL AND CORRECTION REQUIREMENTS. INCLUDE COST ASSOCIATED WITH THIS UPGRADE IN THE BID.

46. ELECTRICAL CABINETS AND ENCLOSURES LOCATED IN PUBLIC AREAS SHALL BE LOCKABLE TYPE.

47. PENETRATIONS THROUGH STRUCTURAL MEMBERS SHALL NOT BE PERMITTED WITHOUT SPECIFIC WRITTEN PERMISSION FROM STRUCTURAL ENGINEER AND ARCHITECT. SUBMIT REQUESTS FOR PENETRATIONS TO ARCHITECT FOR REVIEW AND DISPOSITION. PRIOR TO CORE, DRILLING THROUGH FLOORS, VERIFY CLEARANCE OF BEAMS, DUCTWORK, ETC IN CEILING SPACE BELOW, AND X-RAY FOR CONDUIT AND/OR REBAR IN SLAB. COORDINATE WITH BUILDING MANAGEMENT/OWNER TO INFORM TENANT BELOW FOR SCHEDULING OF CORE DRILLING AND TO ADVICE CONCERNING PROTECTION FOR ANY SENSITIVE EQUIPMENT PRIOR TO COMMENCEMENT OF WORK. ALL X-RAYS AND CORE DRILLS MUST BE SCHEDULED FOR AFTER HOURS UNLESS BUILDING MANAGEMENT/OWNER AUTHORIZES OTHERWISE.

48. RACEWAYS SHALL BE PROVIDED WITH EXPANSION FITTINGS WHERE NECESSARY TO COMPENSATE FOR THERMAL EXPANSION AND CONTRACTION, AND TO ALLOW FOR MINOR MOVEMENT OF THE STRUCTURAL ELEMENTS OF THE BUILDING EXPANSION FITTINGS FOR METAL RACEWAYS SHALL BE MADE ELECTRICALLY CONTINUOUS BY EQUIPMENT BONDING JUMPERS OR OTHER MEANS.

49. PROVIDE TYPEWRITTEN, UPDATED PANELBOARD DOOR DIRECTORIES FOR ALL AFFECTED PANELS PER NEC 408.4, REFLECTING ACCURATE BRANCH CIRCUIT DESTINATIONS. CLEARLY MARK JUNCTION BOXES IN CEILING SPACE WITH PANEL DESIGNATIONS AND CIRCUIT NUMBERS. PROVIDE NEW ENGRAVED PLASTIC LABELS TO REPLACE ANY DAMAGED MISLABELED, TEMPORARY OR OTHERWISE ILLEGIBLE EXISTING IDENTIFICATION LABELS FOR DISTRIBUTION EQUIPMENT AFFECTED BY THIS CONTRACT. ATTACH THESE LABELS PERMANENTLY TO EQUIPMENT WITH RIVETS OR SCREWS. ALL PANEL SCHEDULES SHALL INDICATE THE NAME OF THE UPSTREAM PANEL OR SWITCHBOARD PROVIDING POWER.

50. CLEAN EXPOSED PANEL BOARD SURFACES AND CHECK TIGHTNESS OF ELECTRICAL CONNECTIONS. REPLACE DAMAGED CIRCUIT BREAKERS AS REQUIRED AND PROVIDE CLOSURE PLATES FOR VACANT SPACES. ALL NEW PANELS PROVIDED UNDER THIS CONTRACT SHALL BE DOOR-IN-DOOR CONSTRUCTION TYPE, WITH BOLT-ON CIRCUIT BREAKERS AND COPPER BUSSING, UNLESS SPECIFICALLY NOTED OTHERWISE.

51. PROVIDE FIRE STOPPING MATERIAL AND SYSTEMS AS LISTED IN THE UL FIRE RESISTANCE DIRECTORY EQUAL TO THE FIRE RESISTANCE RATING OF THE RESPECTIVE WALL OR FLOOR ASSEMBLY FOR ALL PENETRATIONS OF CONDUIT, SLEEVES, WIRING, CABLES AND OTHER ELECTRICAL ITEMS THROUGH FIRE-RATED CORRIDOR WALLS, FIRE RESISTIVE WALLS, FIRE RESISTIVE SHAFTS, AND FLOOR PENETRATIONS.

MECHANICAL SYSTEM

1. ELECTRICAL CONTRACTOR SHALL REVIEW MECHANICAL AND PLUMBING DRAWINGS AND SCHEDULES FOR VERIFICATION OF THE EQUIPMENT USED, WIRING AND ADDITIONAL INSTALLATION REQUIREMENTS PRIOR TO PROVIDING REQUIRED ROUGH-INS STARTERS/DISCONNECT SWITCHES, WHEN EQUIPMENT DELIVERED TO JOB SITE. ELECTRICAL CONTRACTOR SHALL VERIFY THIS DATA WITH EQUIPMENT NAMEPLATES OR MANUALS IF SIGNIFICANT DISCREPANCIES OCCUR CONTACT ELECTRICAL ENGINEER FOR REVISION OF THE CONSTRUCTION DOCUMENTS.

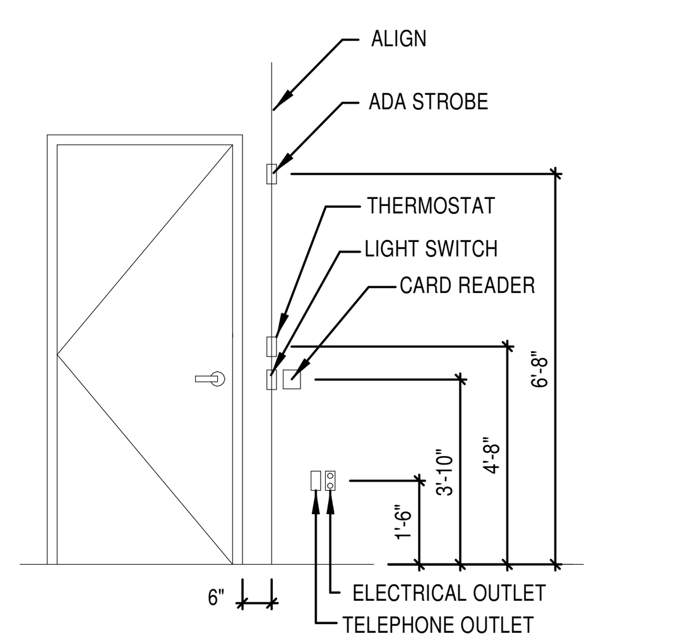
2. PROVIDE ALL REQUIRED OUTLETS; HEAVY-DUTY SAFETY DISCONNECT SWITCHES, FUSES AND CONNECTIONS FOR ALL MECHANICAL EQUIPMENT UNLESS PROVIDED BY MECHANICAL CONTRACTOR AS SPECIFICALLY DIRECTED ON MECHANICAL DRAWING OR SPECIFICATION REQUIREMENTS.

3. ELECTRICAL POWER WIRING IN CONNECTION WITH THE AUTOMATIC TEMPERATURE CONTROL SYSTEM, WHERE SHOWN ON THE ELECTRICAL DIVISION DRAWINGS, SHALL BE PERFORMED BY THE ELECTRICAL CONTRACTOR. ALL OTHER WIRING, INCLUDING LOW VOLTAGE REQUIRED FOR PROPER OPERATION OF THE AUTOMATIC TEMPERATURE CONTROL SYSTEM, SHALL BE PERFORMED BY THE MECHANICAL CONTRACTOR.

RECORD DOCUMENTS

1. RECORD DOCUMENTS: THE ELECTRICAL CONTRACTOR SHALL MAINTAIN ACCURATE RECORDS OF ALL DEVIATIONS IN WORK AS INSTALLED FROM WORK SPECIFIED ON THE DRAWINGS OR IN THE SPECIFICATIONS AND IDENTIFY ORIGIN OF CHANGE.

2. KEEP A COMPLETE SET OF RECORD DOCUMENT PRINTS IN CUSTODY DURING ENTIRE PERIOD OF CONSTRUCTION AT THE CONSTRUCTION SITE. ON COMPLETION OF THE PROJECT, TWO COMPLETE SETS OF MARKED-UP PRINTS SHOWING THESE DEVIATIONS SHALL BE DELIVERED TO GENERAL CONTRACTOR AND ARCHITECT/ENGINEER. THIS CONTRACT WILL NOT BE CONSIDERED COMPLETED UNTIL THESE RECORD DRAWINGS HAVE BEEN RECEIVED AND REVIEWED BY THE ENGINEER.



TYPICAL DETAIL FOR DEVICES AT DOOR LOCATION

SCALE: NONE

DEMOLITION

1. DURING THE DEMOLITION PHASE OF THIS CONTRACT, IT IS THE RESPONSIBILITY OF THIS CONTRACTOR TO VERIFY DEMOLITION SCOPE AND ITEMS WITH ARCHITECTURAL AND ELECTRICAL DRAWINGS. EXISTING LIGHT FIXTURES, ELECTRICAL DEVICES, EQUIPMENT AND RELATED ITEMS SHALL BE CAREFULLY REMOVED EITHER AS SHOWN ON THE DEMOLITION DRAWINGS AS BEING REMOVED, OR AS REQUIRED FOR THE WORK UNDER THIS CONTRACT. THESE ITEMS SHALL BE TAGGED, PROTECTED FROM DAMAGE, AND STORED AS DIRECTED BY THE BUILDING MANAGEMENT/OWNER, ARCHITECT OR ENGINEER.

2. DEMOLITION OR ABANDONING ANY ELECTRICAL AND COMMUNICATIONS CONDUIT, WIRING, CABLING, OR DEVICE MEANS TO REMOVE IN ITS ENTIRETY. REMOVE UNUSED CONDUITS FROM CEILING SPACES IN AREAS OF WORK. ABANDONED OUTLET JUNCTION BOXES ARE TO BE REMOVED AND COVERED WITH NEW GYPSUM BOARD. ABANDONED POKE THRU OUTLETS SHALL HAVE COVER PLATES AND BE FILLED WITH FIRE RATED FOAM SEALANT TO MAINTAIN FIRE RATING OF FLOOR.

3. CONTRACTOR SHALL REMOVE SWITCHES, DATA/TELEPHONE OUTLETS, AND ELECTRICAL OUTLETS SCHEDULED FOR DEMOLITION. ALL UNUSED POWER WIRING SHALL BE REMOVED BACK TO JUNCTION BOX IN CEILING SPACE OR TO THE ELECTRICAL PANEL FEEDING THE CIRCUIT. THE SPARE CIRCUIT BREAKER SHALL BE SWITCHED TO THE "OFF" POSITION AND NOTED ON PANEL DIRECTORY AS SPARE WITH THE JUNCTION BOX LOCATION IF APPLICABLE.

4. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR RINGING OUT ALL CIRCUITS WHICH ARE OR MAY BE AFFECTED BY THIS PROJECT TO ENSURE CIRCUIT CONTINUITY AND TO PREVENT OVERLOADING OF ANY SINGLE CIRCUIT. CONTRACTOR SHALL ENSURE THAT CIRCUITS SHARED BETWEEN PROJECT AREA AND EXISTING TENANT SPACES REMAIN INTACT PER ORIGINAL DESIGN INTENT. CORRECT ANY MISLABELED J-BOX COVERS WITH ACCURATE PANEL/BRANCH CIRCUIT IDENTIFICATION. REFER TO DETAIL NOTES ON PLANS THAT APPLY TO WORK TO BE PERFORMED UNDER THIS CONTRACT. CIRCUIT BREAKERS FOR ALL UNUSED CIRCUITS SHALL BE TURNED TO THE "OFF" POSITION AND LABELED AS SPARE ON REVISED PANEL DIRECTORIES.

5. PROVIDE NEW JUNCTION BOXES, NEW CONDUIT AND WIRING AS REQUIRED TO REPAIR, REROUTE AND RECONNECT CONDUCTORS THAT ARE DAMAGED, DISTURBED OR OTHERWISE ADVERSELY AFFECTED BY THE DEMOLITION AND REMODEL WORK.

6. THE LOCATIONS OF EXISTING LIGHTING FIXTURES, POWER DEVICES AND WIRING, ETC., SHOWN ON THE DRAWINGS HAS BEEN TAKEN FROM EXISTING DRAWINGS AND ARE, THEREFORE, ONLY AS ACCURATE AS THAT INFORMATION. ALL EXISTING CONDITIONS SHALL BE VERIFIED AT THE FIELD WITH NECESSARY ADJUSTMENT BEING MADE TO THE DRAWING INFORMATION.

7. ALL FLOOR AND WALL PENETRATIONS WHERE ELECTRICAL DEVICES AND RACEWAY HAVE BEEN REMOVED MUST BE REPAIRED AND SEALED TO MAINTAIN THE REQUIRED FIRE RATING. ALL LUMINAIRES PENETRATING A ONE HOUR FIRE RESISTIVE ENCLOSURE SHALL BE PROPERLY TENTED TO MAINTAIN FIRE RATING OF THE ENCLOSURE. ALL CONDUITS PENETRATING A ONE HOUR FIRE RATED WALL OR CEILING SHALL BE FIRE STOPPED WITH A U.L. LISTED FIRE STOPPING COMPOUND SEALANT.

8. MAINTAIN LIGHTING CIRCUIT AND SWITCHING CONTROL CONTINUITY IN VACANT AND NON-VACANT AREAS THAT ARE ADJACENT TO PROJECT.

9. MAINTAIN RECEPTACLE CIRCUIT CONTINUITY THROUGH WALLS WHICH ARE TO BE DEMOLISHED AND THROUGH RECEPTACLES WHICH ARE TO BE REMOVED.

10. OWNER HAS RIGHT OF FIRST REFUSAL FOR ALL REMOVED EQUIPMENT, FIXTURES, DEVICES, AND CONDUCTORS. THE ELECTRICAL CONTRACTOR SHALL COORDINATE STORAGE AND/OR DISPOSAL OF ALL SUCH ITEMS WITH OWNER/PROPERTY MANAGEMENT PRIOR TO REMOVAL FROM SITE.

WARRANTY

1. PROVIDE COMPLETE WARRANTY INFORMATION FOR EACH ITEM, WHICH SHALL INCLUDE NAME OF PRODUCT OR EQUIPMENT: DATE OF BEGINNING OF WARRANTY OR BOND; DURATION OF WARRANTY OR BOND; AND NAMES, ADDRESSES, AND TELEPHONE NUMBERS OF MANUFACTURING/SERVICING PERSONNEL AS WELL AS PROCEDURES FOR FILING A CLAIM AND OBTAINING WARRANTY SERVICES.

2. THE CONTRACTOR SHALL WARRANT ALL MATERIALS, WORKMANSHIP AND THE SUCCESSFUL OPERATION OF ALL EQUIPMENT AND APPARATUS INSTALLED FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF FINAL ACCEPTANCE OF THE ENTIRE WORK AS IDENTIFIED IN THE GENERAL CONDITIONS.

ELECTRICAL SYMBOLS LEGEND

LIGHTING

SYMBOL (SURFACE / RECESSED)	DESCRIPTION
	SHADING INDICATES CONNECTION TO EMERGENCY CIRCUIT OR 90-MINUTE BATTERY BACKUP
	2'x4' FLUORESCENT LIGHT FIXTURE
	2'x2' FLUORESCENT LIGHT FIXTURE
	1'x4' FLUORESCENT LIGHT FIXURE
(WALL / CEILING)	EXIT SIGN
	EMERGENCY BATTERY PACK FIXTURE

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	PENDANT FLUORESCENT FIXTURE		FLUORESCENT STRIP FIXTURE
	FLUORESCENT WALL BRACKET		UNDER CABINET FLUORESCENT FIXTURE
	DOWNLIGHT FIXTURE		PENDANT FIXTURE
	WALL MOUNTED FIXTURE		WALLWASH FIXTURE
	TRACK LIGHTING		POLE MOUNTED OUTDOOR FIXTURE
	COMBINATION LIGHT AND EXHAUST FAN		REMOTE EMERGENCY LIGHT HEAD
	PHOTOCELL		

SWITCHING

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
S	SINGLE POLE SWITCH	SD	DIMMER SWITCH
S2	DOUBLE POLE SWITCH	SK	KEYED SWITCH
S3	THREE WAY SWITCH	STO	THERMAL OVERLOAD SWITCH
S4	FOUR WAY SWITCH	SS	GANGED SWITCHES
SM (WALL) / OC (CEILING)	OCCUPANCY SENSOR FOR LIGHTING CONTROLS		

ABBREVIATIONS

ABBR.	DESCRIPTION
AFF	ABOVE FINISHED FLOOR
AC	ABOVE COUNTER
GFI	GROUND FAULT CIRCUIT INTERRUPTER
GND	GROUND
IG	ISOLATED GROUND
NL	NIGHT LIGHT
RL	RELOCATED DEVICE OR EQUIPMENT
WP	WEATHER PROOF
EM	EMERGENCY
HD	HEAVY DUTY
TR	TAMPER RESISTANT

POWER

SYMBOL (WALL / CEILING / FLOOR)	DESCRIPTION
	JUNCTION BOX
	DUPLEX RECEPTACLE
	DEDICATED DUPLEX RECEPTACLE
	DOUBLE DUPLEX RECEPTACLE
	DEDICATED DOUBLE RECEPTACLE
	SPECIAL PURPOSE RECEPTACLE
	COVER PLATE
	CONTACTOR
	SIMPLEX RECEPTACLE
(SURFACE / RECESSED)	NEW ELECTRICAL PANEL
	EXISTING ELECTRICAL PANEL
	DEMO ELECTRICAL PANEL

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	DISCONNECT, NON FUSED		DISCONNECT, FUSED
	GROUND BAR		PULLBOX
	MOTOR		TRANSFORMER
	TIMECLOCK		METER
	WATER HEATER		SWITCHBOARD
	POWER POLE		COMBINATION POWER/COMM. FLOOR BOX
PM	PLUGMOLD		
WM	WIREMOLD		

COMMUNICATION

SYMBOL (WALL / CEILING / FLOOR)	DESCRIPTION
	COMBINATION DATA/ TELEPHONE OUTLET
	CRT OR DATA OUTLET
	TELEPHONE OUTLET
	TV OUTLET

CIRCUITING

SYMBOL	DESCRIPTION
	HOMERUN, SOLID 120/208 V, OPEN 277/480 V
	CIRCUIT; RUN CONCEALED IN WALL OR CEILING
	CIRCUIT; RUN CONCEALED IN FLOOR OR GRADE
	CONDUIT RISER; TURNED UP, TURNED DOWN

FIRE ALARM AND SECURITY

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
T	THERMOSTAT		MANUAL PULL STATION
F	DUCT DETECTOR		REMOTE LAMP
M	MOTION SENSOR	D	FIRE/SMOKE DAMPER
	HEAT DETECTOR	ANN	ANNUNCIATOR PANEL
FACP	FIRE ALARM CONTROL PANEL	CR	CARD READER
			SECURITY CAMERA
		DH	DOOR HOLDER

SYMBOL (WALL / CEILING)	DESCRIPTION
	SMOKE DETECTOR
	FIRE HORN STROBE LIGHT
	FIRE ALARM STROBE LIGHT
	PAGER OR MUSIC SPEAKER
	FIRE ALARM SPEAKER

ONE-LINE

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	PANEL BOARD		FUSED DISCONNECT WITHIN SWITCHBOARD
	NON-FUSED DISCONNECT SWITCH		TRANSFER SWITCH
	FUSED DISCONNECT SWITCH		GENERATOR
	EXTERIOR PAD-MOUNTED TRANSFORMER		METER
	INTERIOR TRANSFORMER		WEATHER HEAD
	CURRENT TRANSFORMER		CURRENT TRANSFORMER
			GROUNDING CONDUCTOR
	PULL BOX		MOTOR
SPARE	SPARE SWITCH WITHIN SWITCHBOARD	SPACE	SPACE WITHIN SWITCHBOARD
			CIRCUIT BREAKER

OCCUPANCY SENSOR SCHEDULE

SYMBOL	MANUFACTURER	CATALOG #	DESCRIPTION	NOTES
SMD	WATTSTOPPER SENSORSWITCH COOPER/GREENGATE	DW-100 WSX-PDT ONW-D-1001-MV	DUAL TECHNOLOGY, WALL-MOUNTED SINGLE-LEVEL 120/277V OCCUPANCY SENSOR SWITCH; COLOR TO MATCH BUILDING-STANDARD	1,4,5
SMP	WATTSTOPPER SENSORSWITCH COOPER/GREENGATE	PW-100 WSX OSW-P-1001-MV	PASSIVE-INFRARED, WALL-MOUNTED SINGLE-LEVEL 120/277V OCCUPANCY SENSOR SWITCH; COLOR TO MATCH BUILDING-STANDARD	1,4,5
SSMD	WATTSTOPPER SENSORSWITCH COOPER/GREENGATE	DW-200 WSX-PDT-2P ONW-D-1001-DMV	DUAL TECHNOLOGY, WALL-MOUNTED DUAL-LEVEL 120/277V OCCUPANCY SENSOR SWITCH; COLOR TO MATCH BUILDING-STANDARD. SEE PLAN NOTES FOR CONNECTION INFORMATION FOR EACH OF (2) SWITCH LEGS ON THIS SENSOR.	1,4,5
OC DR	WATTSTOPPER SENSORSWITCH COOPER/GREENGATE	DT-355 CMR-PDT-9 OAC-DT-2000-MV	DUAL TECHNOLOGY, CEILING MOUNTED OCCUPANCY SENSOR WITH BUILT-IN 120/277V SWITCHING RELAY FOR STANDALONE OPERATION. STANDARD 1000 SQ. FT. COVERAGE. RATED FOR 800W MINIMUM LOAD AT 120V, 1200W AT 277V.	1,3,4
OC D	WATTSTOPPER SENSORSWITCH COOPER/GREENGATE	DT-305 / BZ-50 CM-PDT-9 / PP20 OAC-DT-1000 / SP20-MV	DUAL TECHNOLOGY, CEILING MOUNTED OCCUPANCY SENSOR. STANDARD 1000 SQ. FT. COVERAGE. SEPARATE POWER PACK (SPECIFIED) REQUIRED FOR OPERATION.	1,2,3,4
OC X	WATTSTOPPER SENSORSWITCH COOPER/GREENGATE	WT-2200 / BZ-50 CM-PDT-10 / PP20 OAC-DT-2000 / SP20-MV	EXTENDED-RANGE (2000 SQ. FT.) CEILING MOUNTED OCCUPANCY SENSOR. ULTRASONIC OR DUAL TECHNOLOGY. SEPARATE POWER PACK (SPECIFIED) REQUIRED FOR OPERATION.	1,2,3,4
OC WP	WATTSTOPPER SENSORSWITCH COOPER/GREENGATE	CB-100 / BZ-50 SBR-10-ODP OXC-P-1500-R / SP20-MV	WEATHER-PROOF, EXTREME-TEMPERATURE OCCUPANCY SENSOR. SEPARATE POWER PACK REQUIRED, DEPENDING ON MANUFACTURER.	1,2,3,4
OC #	AS SPECIFIED ON PLAN	AS SPECIFIED ON PLAN	OTHER CEILING-MOUNTED OCCUPANCY SENSOR, AS SPECIFIED IN PLAN NOTES AND/OR SCHEDULES.	1,3,4
SM #	AS SPECIFIED ON PLAN	AS SPECIFIED ON PLAN	OTHER WALL-MOUNTED OCCUPANCY SENSOR SWITCH, AS SPECIFIED IN PLAN NOTES AND/OR SCHEDULES.	1,4,5

NOTES:
1. INSTALL ALL SENSORS, POWER PACKS AND ACCESSORIES PER MANUFACTURER'S INSTRUCTIONS. PROVIDE ALL ACCESSORIES REQUIRED FOR COMPLETE SYSTEM.
2. REFER TO THE MANUFACTURER'S SPECIFICATIONS FOR MAXIMUM QUANTITY OF SENSORS PER POWER PACK AND PROVIDE ADDITIONAL POWER PACKS AS REQUIRED.
3. CONTRACTOR TO FIELD-ADJUST SENSOR PLACEMENT AND AIM IN EACH LOCATION IN THE FIELD, FOR OPTIMUM COVERAGE.
4. ALL DEVICES AND ACCESSORIES FOR THE PROJECT SHALL BE SUPPLIED FROM A SINGLE MANUFACTURER. MATCH EXISTING/BUILDING STANDARD WHERE PRESENT.
5. PROVIDE NEUTRAL CONDUCTOR IN SWITCH BOX FOR ALL WALL-MOUNTED OCCUPANCY SENSOR/SWITCHES WHERE REQUIRED BY MANUFACTURER.

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221 E Kiowa St Colorado Springs, CO 80903

OWNER:
COLORADO SPRINGS CITY AUDITORIUM
221 E Kiowa St
Colorado Springs, CO 80903

ISSUE:
10/16/15 ISSUED FOR BIDDING AND CONSTRUCTION

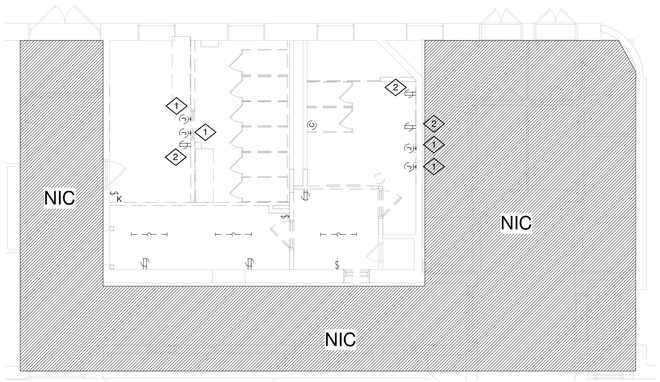
DRAWING INFORMATION:

PROJECT NO:	15380
DRAWN BY:	LEE
PROJECT ENGINEER:	AW
APPROVED BY:	SLS

SHEET TITLE:
General Notes and Electrical Legend

E001

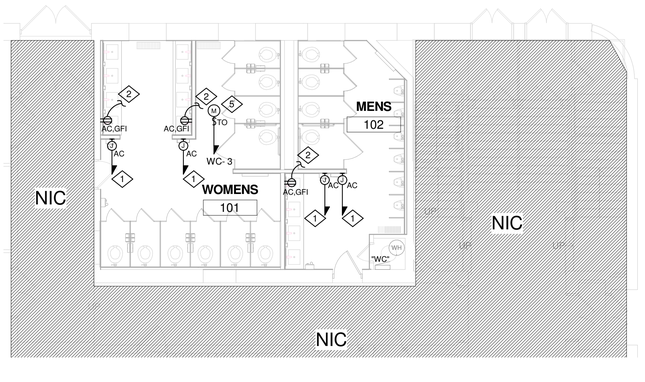
SHEET 1 OF 2



Level 1 Demolition Lighting Plan

1/8" = 1'-0"

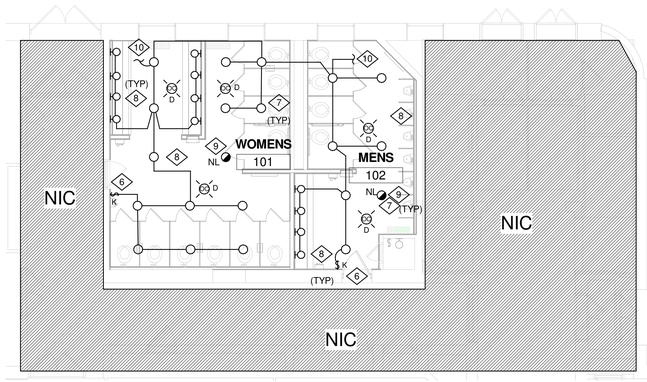
GENERAL NOTES:
A. REMOVED ITEMS SHOWN AS DASHED AND LIGHT



Level 1 Power Plan

1/8" = 1'-0"

GENERAL NOTES:
A. NEW AND RELOCATED ITEMS SHOWN AS BOLD
EXISTING ITEMS SHOWN AS LIGHT



Level 1 Lighting Plan

1/8" = 1'-0"

GENERAL NOTES:
A. NEW AND RELOCATED ITEMS SHOWN AS BOLD
EXISTING ITEMS SHOWN AS LIGHT
B. TOTAL LIGHTING LOAD REDUCED.

DETAIL NOTES

1. PRESERVE HAND DRYER CIRCUIT FOR NEW LOCATION PER POWER PLAN.
2. PRESERVE RECEPTACLE CIRCUIT FOR RE-USE IN NEW LOCATION PER POWER PLAN.
3. E.C. TO REMOVE ALL ABANDONED CONDUIT/CABLING/WIRING FROM SPACE INCLUDING ABOVE THE CEILING BACK TO SOURCE. ANY CIRCUITS MADE SPARE TO BE TURNED OFF AND LABELED AS SUCH WITH VEW TYPED PANEL SCHEDULES.
4. RETURN LIGHTING NOT RE-USED TO BUILDING MANAGEMENT.
5. EXHAUST FAN 7A/120V. CONNECT FAN THROUGH THERMAL SWITCH USING 2-#12 CU AND #12 GND IN 3/4"C. COORDINATE CONTROL WITH M.C.
6. RE-USE EXISTING OPENING FOR NEW KEYED SWITCH.
7. 6" DOWNLIGHT FOR PLASTER CEILING. 17W/120V. HALO #PD6-15-ED010-PDM6A-###-61V-C. MATCH VANITY COLOR TEMPERATURE.
8. LED VANITY FIXTURE, 120V/POLISHED NICKEL. FEISS #VS21903PN-LA. (3) 13W LED. COORDINATE HEIGHT WITH ARCHITECT. SURFACE MOUNT ON PLASTER PROVIDING SURFACE CONDUIT FROM NEW PENETRATION THROUGH CEILING.
9. PROVIDE FIXTURE WITH 90-MIN BATTERY BACKUP AND TEST SWITCH AND CIRCUIT TO LOCAL LIGHTING CIRCUIT AHEAD OF CONTROL.
10. CONNECT TO LOCAL LIGHTING CIRCUIT. E.C. TO VERIFY NO MORE THAN 70% LOAD ON A SINGLE 120V LIGHTING CIRCUIT.

COMcheck Software Version 3.9.4
Interior Lighting and Power Compliance Certificate

2012 IECC

Section 1: Project Information

Project Type: **Alteration**
Project Title : CO Springs Auditorium

Construction Site: Owner/Agent: Designer/Contractor:
Alex Wolke
Corey EE

Section 2: Interior Lighting and Power Calculation

A Area Category	B Floor Area (ft2)	C Allowed Watts / ft2	D Allowed Watts (B x C)
Common Space Types:Restroom	870	1	870
		Total Allowed Watts =	870

Section 3: Interior Lighting Fixture Schedule

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixtures	D Fixture Watt.	E (C X D)
Common Space Types:Restroom (870 sq.ft.)				
Incandescent 1: Incandescent 35W:	1	1	35	35
LED 1: Other:	1	21	17	357
LED 2: Other:	3	12	39	468
			Total Proposed Watts =	860

Interior Lighting PASSES

Section 4: Compliance Statement

Compliance Statement: The proposed lighting design represented in this document is consistent with the building plans, specifications and other calculations submitted with this permit application. The proposed lighting system has been designed to meet the 2012 IECC requirements in COMcheck Version 3.9.4 and to comply with the mandatory requirements in the Requirements Checklist.

Name - Title | Signature | Date

Section 5: Post Construction Compliance Statement

Record Drawings and Operating and Maintenance Manuals:

☐ 1. Construction documents with record drawings and operating and maintenance manuals provided to the owner.

ALEX WOLKE - PROJECT MANAGER | Signature | 10/2/15
Lighting Designer or Contractor Name | Signature | Date

Project Title: CO Springs Auditorium Report date: 10/02/15
Data filename: F:\DATA\ACAD\15 Archives\15300-15399\15380 Colorado Springs Auditorium\Design\IECC-Comcheck\IECC.cck Page 1 of 1

3PH FAULT CALCULATION

POINT #1, AT THE UTILITY TRANSFORMER;

Isc = 100,000 A (WORST CASE)

POINT #4, AT PANEL LC;

f = 1.73 x Length x Isc (source) / L-L Volts x Wire Factor
f = 1.73 x 20 x 100000 A / 208 x 8924
f = 1.86

M = 1 / 1+f = 1 / 1+ 1.86 = 0.35

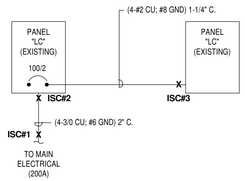
Isc = M x Isc (source) = 0.35 x 100000 A = 34,916 A

POINT #5, AT PANEL WC;

f = 1.73 x Length x Isc (source) / L-L Volts x Wire Factor
f = 1.73 x 150 x 34916 A / 208 x 5906
f = 7.38

M = 1 / 1+f = 1 / 1+ 7.38 = 0.12

Isc = M x Isc (source) = 0.12 x 34916 A = 4,169 A



PARTIAL ONE-LINE DIAGRAM

(NO NEW WORK) 1/8" = 1'-0"

SUPPLIED FROM:

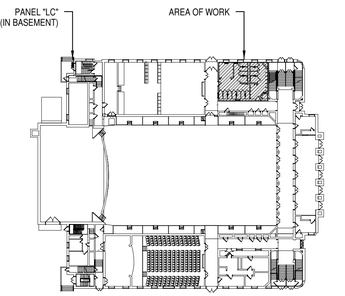
PANEL "WC"(EXISTING) VOLTAGE 120 / 208 V 1 ☐ 3 W
FLUSH ___ M.C.B. ___ MLO X I.G. BAR ___ MANF. ___
SURFACE X BUS 100A CU A.I.C. 10,000 C.B. BOLT ON

TYPE	DESCRIPTION	BKR	CIR	LOAD (VOLT AMPS) / PH. A		LOAD (VOLT AMPS) / PH. B		CIR	BKR	DESCRIPTION	TYPE
G	GAS WH	20	1a	200	500			2a	20	LTG	L
	SPACE		1b	0	200			2b	20	ODORIZER	G
M	EF	20	3a			850	1500	4a	20	MENS HD	G
	-	1P	3b			0	0	4b	1P	-	
	SPACE		5a	0	1500			6a	20	MENS HD	G
	SPACE		5b	0	1500			6b	20	WOMENS HD	G
	SPACE		7a			0	1500	8a	20	WOMENS HD	G
	SPACE		7b			0	0	8b		SPACE	
	SPARE	50	9a	0	1500			10a	20	HAND DRYER	G
	.	/	9b	0	0			10b	1P	-	
	.	/	11a			0	1500	12a	20	HAND DRYER	G
	.	2P	11b			0	0	12b	1P	-	
				5400		5350					

LOAD TYPE	CONNECTED KVA A	B	ALL PHASES	FACTOR	DEMAND KVA A	B	ALL PHASES TOTAL
LIGHTING	0.5	0.0	0.5	125%	0.6	0.0	0.6
RECEPTACLE (10KVA OR LESS)	0.0	0.0	0.0	100%	0.0	0.0	0.0
RECEPTACLE (OVER 10KVA)	0.0	0.0	0.0	50%	0.0	0.0	0.0
HVAC/MOTOR	0.0	0.0	0.0	100%	0.0	0.0	0.0
MOTOR(LARGEST)	0.0	0.8	0.8	125%	0.0	1.0	1.0
KITCHEN EQUIPMENT	0.0	0.0	0.0	65%	0.0	0.0	0.0
MISCELLANEOUS	4.9	4.5	9.4	100%	4.9	4.5	9.4
TOTAL KVA	5.4	5.4	10.8	TOTAL KVA	5.5	5.6	11.1
				TOTAL AMPS	46.0	46.3	53.2

LEGEND: L = LIGHTING R = RECEPTACLE M = HVAC / MOTOR K = KITCHEN G = MISCELLANEOUS
MAX PERCENT DIFFERENCE BETWEEN PHASES (A,B): 0.0092592592592926

* NEW CIRCUIT BREAKER TO MATCH EXISTING MANUFACTURER AND AIC RATING.



KEYPLAN

1" = 50'-0"

SLATERPAULL
hord | coplan | macht
1331 Nineteenth Street
Denver, CO. 80202
P 303.607.0977
www.slaterpaull.com

CONSULTANT:

COREY Electrical Engineering, Inc.
Commercial and Transportation Design
7822 S. Wheeling Ct. Suite B, Englewood, CO 80112 | P (303) 696-1257 | projects@coreyeng.com

PROJECT:

CS AUDITORIUM RESTROOM RENOVATION

221 E Kiowa St Colorado Springs, CO 80903

OWNER:

COLORADO SPRINGS CITY AUDITORIUM

221 E Kiowa St
Colorado Springs, CO 80903

ISSUE:

10/16/15	ISSUED FOR BIDDING AND CONSTRUCTION

DRAWING INFORMATION:

PROJECT NO:	15380
DRAWN BY:	LEE
PROJECT ENGINEER:	AW
APPROVED BY:	SLS

SHEET TITLE:

ELECTRICAL PLANS

E100

SHEET 2 OF 2

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C:\Users\Lee Casados\Documents\15380 Colorado Springs Auditorium_Lee Casados.rvt

DIVISION 230000 - MECHANICAL SPECIFICATIONS

BASIC MECHANICAL REQUIREMENTS

QUALITY ASSURANCE:
1. IF MANUFACTURER'S MATERIAL OR EQUIPMENT IS LISTED IN SCHEDULES OR ON DRAWINGS, THEY ARE TYPES TO BE PROVIDED FOR ESTABLISHMENT OF SIZE, CAPACITY, GRADE, AND QUALITY. IF OTHER ACCEPTABLE MANUFACTURERS ARE USED, COST OF ANY CHANGE IN CONSTRUCTION REQUIRED BY THEIR USE SHALL BE BORNE BY CONTRACTOR.
2. EQUIPMENT SHALL CONFORM TO STATE AND/OR LOCAL ENERGY CONSERVATION STANDARDS.

INTENT AND INTERPRETATIONS:
1. IT IS THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS TO RESULT IN A COMPLETE MECHANICAL INSTALLATION IN COMPLETE ACCORDANCE WITH ALL APPLICABLE LOCAL CODES AND ORDINANCES.
2. DRAWINGS ARE DIAGRAMMATIC IN CHARACTER AND DO NOT NECESSARILY INDICATE EVERY REQUIRED PIPE, OFFSET, TRANSITION, ETC. ITEMS NOT SPECIFICALLY MENTIONED IN THE SPECIFICATION OR NOTED ON THE DRAWINGS, BUT WHICH ARE NECESSARY TO MAKE A COMPLETE WORKING INSTALLATION, SHALL BE INCLUDED.
3. DRAWINGS AND SPECIFICATIONS ARE COMPLEMENTARY. WHATEVER IS CALLED FOR IN EITHER IS BINDING AS THOUGH CALLED FOR IN BOTH. IF THERE IS A CONFLICT IN THE CONTRACT DOCUMENTS, THE MORE DEMANDING AND COSTLY DESIGN SHALL BE SELECTED FOR BIDDING PURPOSES. THE CONTRACTOR SHALL IMMEDIATELY PRESENT THE CONFLICT FOUND IN THE CONTRACT DOCUMENTS TO THE ARCHITECT/ENGINEER FOR RESOLUTION. IF THE RESOLUTION FAVORS A LESS COSTLY DESIGN, THE CONTRACTOR WILL BE REQUIRED TO REIMBURSE THE DIFFERENCE IN COST.
4. DRAWINGS SHALL NOT BE SCALED FOR ROUGH-IN MEASUREMENTS OR USED AS SHOP DRAWINGS. WHERE DRAWINGS ARE REQUIRED FOR THESE PURPOSES OR HAVE TO BE MADE FROM FIELD MEASUREMENTS, TAKE THE NECESSARY MEASUREMENTS AND PREPARE THE DRAWINGS.
5. BEFORE ANY WORK IS INSTALLED, DETERMINE THAT EQUIPMENT WILL PROPERLY FIT THE SPACE, THAT REQUIRED CLEARANCES CAN BE MAINTAINED AND THAT EQUIPMENT CAN BE LOCATED WITHOUT INTERFERENCES BETWEEN SYSTEMS, WITH STRUCTURAL ELEMENTS, OR WITH THE WORK OF OTHER TRADES.
6. IF CONFLICTS ARE DISCOVERED IN CONTRACT DOCUMENTS AS WORK PROGRESSES, SUBMIT A SET OF DRAWINGS MARKED WITH RED PENCIL SHOWING RECOMMENDED MODIFICATIONS TO THE ARCHITECT FOR APPROVAL PRIOR TO INSTALLATION.

JOB CONDITIONS:
1. CONFER, COOPERATE, AND COORDINATE WORK WITH OTHER TRADES. COORDINATE CEILING CAVITY SPACE CAREFULLY WITH ALL TRADES. IN EVENT OF CONFLICT, INSTALL MECHANICAL AND ELECTRICAL SYSTEMS WITHIN CAVITY SPACE IN FOLLOWING ORDER OF PRIORITY.
   - A. PLUMBING WASTE AND VENT PIPING.
   - B. ROOF DRAIN PIPING.
   - C. DUCTWORK.
   - D. ELECTRICAL CONDUIT AND LIGHTING.
   - E. DOMESTIC HOT AND COLD WATER PIPING.
   - F. FIRE SPRINKLER PIPING.

PERMITS AND FEES:
1. ARRANGE AND PAY FOR ALL INSPECTIONS, PERMITS, LICENSES, CERTIFICATES, AND FEES REQUIRED IN CONNECTION WITH WORK.

SUBMITTALS AND SHOP DRAWINGS:
1. CONFORM TO REQUIREMENTS OF DIVISION 1 AND FOLLOWING PARAGRAPHS.
2. SUBMITTALS SHALL INCLUDE CATALOG CUT-SHEETS AND MANUFACTURER'S DATA SHEETS.
3. PRIOR TO ORDERING EQUIPMENT OR BEGINNING INSTALLATION WORK, ASSEMBLE, PREPARE, AND FURNISH SUBMITTALS AND SHOP DRAWINGS REQUIRED FOR PROJECT. FURNISH SUBMITTALS AND SHOP DRAWINGS AS REQUIRED BY INDIVIDUAL SECTIONS OF SPECIFICATIONS.
4. CONTRACTOR SHALL THOROUGHLY CHECK SUBCONTRACTORS' OR VENDORS' SUBMITTALS AND SHOP DRAWINGS AND, AFTER APPROVING THEM, SUBMIT THEM FOR REVIEW. SUBMITTALS AND SHOP DRAWINGS THAT DO NOT BEAR CONTRACTOR'S REVIEW STAMP WILL BE RETURNED NOT REVIEWED.
5. IF DISCREPANCIES BETWEEN SUBMITTALS, SHOP DRAWINGS, AND CONTRACT DOCUMENTS ARE DISCOVERED EITHER PRIOR TO OR AFTER SUBMITTALS AND SHOP DRAWINGS ARE REVIEWED, REQUIREMENTS OF CONTRACT DOCUMENTS SHALL TAKE PRECEDENCE. SUBMITTALS AND SHOP DRAWINGS WHICH ARE SUBMITTED, BUT WHICH ARE NOT REQUIRED BY CONTRACT DOCUMENTS, WILL BE RETURNED NOT REVIEWED.
6. SUBMITTALS AND SHOP DRAWINGS SHALL IDENTIFY SPECIFIC EQUIPMENT WITH NUMBERS OR LETTERS IDENTICAL TO THOSE LISTED OR SCHEDULED ON THE DRAWINGS OR SPECIFICATIONS.

RECORD DOCUMENTS:
1. KEEP IN CUSTODY DURING ENTIRE PERIOD OF CONSTRUCTION, A CURRENT SET OF DOCUMENTS INDICATING CHANGES THAT HAVE BEEN MADE TO THE CONTRACT DOCUMENTS.
2. UPON COMPLETION OF WORK, SUBMIT THE COMPLETE SET OF RECORD DOCUMENTS TO THE ARCHITECT.

PROTECTION OF EQUIPMENT:
1. PROTECT MATERIALS AND EQUIPMENT FROM PHYSICAL DAMAGE, CONSTRUCTION DIRT, AND THE ELEMENTS FROM TIME OF SHIPMENT TO TIME INSTALLATION IS ACCEPTED BY OWNER.

GUARANTEE:
1. GUARANTEE MATERIALS, WORKMANSHIP, AND OPERATION OF EQUIPMENT INSTALLED FOR PERIOD OF ONE YEAR FROM DATE OF ACCEPTANCE OF ENTIRE WORK. REPAIR OR REPLACE ANY PART OF WORK WHICH SHOWS DEFECT DURING THAT TIME.
2. BE RESPONSIBLE FOR DAMAGE TO PROPERTY OF OWNER OR TO WORK OF OTHER CONTRACTORS DURING CONSTRUCTION AND GUARANTEE PERIOD.
3. FURNISH EQUIPMENT WARRANTIES TO OWNER.

MECHANICAL EQUIPMENT WIRING AND CONNECTIONS:
1. VOLTAGE CHARACTERISTICS SHALL BE AS IN ELECTRICAL DIVISION OF SPECIFICATIONS AND ON ELECTRICAL DRAWINGS.

TEMPORARY FACILITIES:
1. USE OF EXISTING EQUIPMENT FOR TEMPORARY HEATING OR COOLING: DO NOT USE NEW OR EXISTING BUILDING EQUIPMENT WITHOUT WRITTEN PERMISSION FROM OWNER.

INSPECTIONS:
1. DO NOT COVER UP OR ENCLOSE WORK UNTIL INSPECTED, TESTED, AND APPROVED. ANY WORK ENCLOSED OR COVERED UP BEFORE SUCH APPROVAL SHALL BE UNCOVERED, TESTED, AND APPROVED.

ACCESS DOORS:
1. FURNISH HINGED STEEL ACCESS DOORS WITH CONCEALED LATCH, WHETHER SHOWN OR NOT, IN WALLS AND PLASTER OR GYPSUM BOARD CEILINGS FOR ACCESS TO CONCEALED VALVES, SHOCK ARRESTERS, AIR VENTS, MOTORS, FANS, BALANCING VALVES, OR OTHER OPERATING DEVICES REQUIRING ADJUSTMENT OR SERVICING.
2. ACCESS DOOR SHALL BE SIZE OF EQUIPMENT TO BE REMOVED OR 24" BY 24" IF USED FOR SERVICE ONLY.

SUPERVISION:
1. SUPERVISE WORK TO PROCEED IN PROPER SEQUENCE WITHOUT DELAY TO OTHER CONTRACTORS. KEEP SUPERVISOR ON PREMISES AT ALL TIMES TO ENSURE THAT INTENT OF DRAWINGS AND SPECIFICATIONS IS BEING FOLLOWED.

INSTALLATION:
1. WORKMANSHIP SHALL BE FIRST QUALITY. APPEARANCE OF WORK SHALL BE OF EQUAL IMPORTANCE TO ITS MECHANICAL OPERATION. LACK OF QUALITY WORKMANSHIP SHALL BE REASON FOR REJECTION OF SYSTEM IN PART OR IN WHOLE.
2. INSTALL SO THAT ALL VALVES AND EQUIPMENT CAN BE EASILY ACCESSED AND SERVICED BY ADEQUATE CLEARANCE, INSTALLATION OF ACCESS DOORS, UNIONS IN PIPING, OR OTHER METHODS.
3. COMPLETE INSTALLATION SHALL FUNCTION SMOOTHLY AND NOISELESSLY.
4. INSTALL EQUIPMENT AND MATERIALS PER MANUFACTURERS' RECOMMENDATIONS AND LOCAL CODES OR REGULATIONS.
5. PLACE OR REPLACE ALL EQUIPMENT NAMEPLATES WHERE THEY CAN BE SEEN AND READ WITHOUT DIFFICULTY.
6. FLUSH PIPES FREE OF FOREIGN SUBSTANCES BEFORE INSTALLING VALVES OR MAKING FINAL CONNECTIONS. CLEAN ALL PIPING AND EQUIPMENT.

COMPLETION:
1. CLEAN INSULATION COVERING, DUCTS, PIPES, EQUIPMENT, AND ACCESSORIES TO RECEIVE PRIME COAT OF PAINT. CLEAN EQUIPMENT RECEIVED WITH PRIME COAT TO RECEIVE FINAL COAT.
2. REPLACE AIR FILTERS IF UNITS WERE OPERATED DURING CONSTRUCTION. CLEAN DUCTS, BLOWERS, AND COILS IF UNITS WERE OPERATED WITHOUT FILTERS DURING CONSTRUCTION.
3. INSTRUCT OWNER IN OPERATION AND MAINTENANCE OF MECHANICAL SYSTEMS. MINIMUM PARTICIPANTS SHALL INCLUDE MECHANICAL CONTRACTOR AND CONTROLS CONTRACTOR REPRESENTATIVES.
4. AFTER TESTS AND ADJUSTMENTS HAVE BEEN MADE AND SYSTEMS PRONOUNCED SATISFACTORY FOR PERMANENT OPERATION, REFINISH DAMAGED FINISH AND LEAVE EVERYTHING IN PROPER WORKING ORDER AND APPEARANCE.
5. ON COMPLETION OF WORK, REMOVE TOOLS, SCAFFOLDING, DEBRIS, ETC., FROM GROUNDS AND LEAVE PREMISES CLEAN.

BASIC MECHANICAL REQUIREMENTS (CONTINUED)

OPERATION AND MAINTENANCE MANUALS:
1. PRIOR TO COMPLETION OF PROJECT SUBMIT OPERATION AND MAINTENANCE MANUALS FOR MECHANICAL EQUIPMENT WITH MOVING OR MOVABLE PARTS, INCLUDING PLUMBING SYSTEMS, PER IECC. INSTRUCTIONS SHALL BE IN PAMPHLET, TYPEWRITTEN OR PDF FORM. INSTRUCTIONS FOR EACH PIECE OF EQUIPMENT SHALL BE INDICATED BY A SEPARATE TAB.
2. INCLUDE TEST AND BALANCE REPORT.
3. INCLUDE STARTING, STOPPING, LUBRICATION, PREVENTATIVE MAINTENANCE SCHEDULE, AND ADJUSTMENT INFORMATION FOR EACH PIECE OF EQUIPMENT.
4. INCLUDE GUARANTEES AND WARRANTIES OF ALL EQUIPMENT.

PIPE AND PIPE FITTINGS

PIPE AND TUBE
- A. COPPER REFRIGERANT TUBE: ASTM B280-03, SEAMLESS.
- B. COPPER DRAINAGE TUBE (DWV): ASTM B306-88.

PIPE AND TUBE JOINTS AND FITTINGS
- A. COPPER AND BRASS PIPE FITTINGS: ASME B16.23, PRESSURE FITTINGS; ASME B16.29, DRAINAGE FITTINGS.

GENERAL
- A. COOLING COIL CONDENSATE DRAIN PIPING: MAINTAIN PIPE SLOPE 1/8" DOWN PER LINEAR FOOT IN THE DIRECTION OF FLOW UNLESS OTHERWISE NOTED ON DRAWINGS.
- B. MAKE CONNECTIONS TO EQUIPMENT WITH UNIONS OR FLANGES.
- C. COOLING COIL CONDENSATE DRAIN PIPING SHALL BE EQUAL TO OR LARGER THAN THE EXIT DIAMETER OF THE DRAIN PAN DRAIN CONNECTION.
- D. FLUSH EACH PIPING SYSTEM AND PROVE CLEAN.

COPPER PIPE CONNECTIONS
- A. USE 15% SILVER BRAZING ALLOY AND SILVER BRAZING FLUX ON CONCEALED JOINTS.

REFRIGERANT COPPER PIPE CONNECTIONS
- A. 2-5/8" O.D. AND SMALLER: 95% TIN, 5% ANTIMONY LEAD-FREE SOLDER.
- B. 3-1/8" O.D. AND LARGER, HOT GAS PIPING, BURIED PIPING: 15% SILVER BRAZING ALLOY.
- C. CONTINUOUSLY PURGE PIPING WITH DRY NITROGEN DURING SILVER BRAZING PROCESS.

PIPE TESTING
- A. TEST ALL PIPING SYSTEMS. CORRECT LEAKS BY REMAKING JOINTS. REMOVE EQUIPMENT NOT ABLE TO WITHSTAND TEST PRESSURE FROM SYSTEM DURING TEST. CONSULT GOVERNING CODES FOR SPECIAL SYSTEM REQUIREMENTS.
- B. TEST PIPING BEFORE BEING PERMANENTLY ENCLOSED.
- C. OBTAIN CERTIFICATES OF APPROVAL, ACCEPTANCE, COMPLIANCE WITH REGULATIONS OF AGENCIES HAVING JURISDICTION. SUBMIT TO OWNER.
- D. REFRIGERANT PIPING SYSTEM TEST: TEST WITH NITROGEN AT 300 PSIG ON HIGH SIDE OF SYSTEM AND AT 150 PSIG ON LOW SIDE. MAINTAIN PRESSURE FOR 4 HOURS. AFTER TEST, EVACUATE PIPING WITH VACUUM PUMP FOR MINIMUM 24 HOURS OR UNTIL SYSTEM HAS BEEN COMPLETELY EVACUATED.

SUPPORTS, ANCHORS, SEALS

WORK INCLUDED:
1. DUCT HANGERS AND SUPPORTS.
2. EQUIPMENT BASES AND SUPPORTS.
3. FLASHING FOR MECHANICAL EQUIPMENT.
4. SLEEVING FOR MECHANICAL EQUIPMENT.

REFERENCE STANDARDS:
1. PIPE SUPPORTS: ANSI B31.1, POWER PIPING.
2. DUCT HANGERS AND REINFORCEMENT: SMACNA DUCT MANUALS.
3. FIRE BARRIER PRODUCTS: ASTM E119-00e, ASTM E814-02, ASTM 84-04, AND UL 1479.

SUBMITTALS:
1. FURNISH MANUFACTURER'S SUBMITTAL DATA FOR PREFABRICATED EQUIPMENT SUPPORTS.

DUCT HANGERS AND SUPPORTS:
1. HANGERS: GALVANIZED STEEL BAND, ROLLED ANGLE, OR UNISTRUT TYPE MEMBERS WITH THREADED RODS.
2. WALL SUPPORTS: GALVANIZED STEEL BAND IRON OR FABRICATED ANGLE BRACKET.
3. VERTICAL SUPPORT AT FLOOR: ROLLED ANGLE.
4. RIGID ROUND DUCTWORK: 1" WIDE GALVANIZED STEEL STRAPS; QUANTITY, SPACING, AND GAUGE PER SMACNA STANDARDS.
5. FLEXIBLE DUCTWORK: 1" WIDE GALVANIZED STEEL STRAPS. MAXIMUM ALLOWABLE SAG 1/2" PER FOOT.
6. FLEXIBLE DUCTWORK: 1" WIDE GALVANIZED STEEL STRAPS. MAXIMUM ALLOWABLE SAG 1/2" PER FOOT.
7. SPACING AND GAUGE OF HANGERS PER UNIFORM MECHANICAL CODE, SMACNA STANDARDS, AND DUCT MANUFACTURER'S RECOMMENDATIONS.
8. PROVIDE A MINIMUM OF TWO FASTENERS INTO DUCT AND INTO TOP ATTACHMENT FOR ALL DUCTS WITH LONG SIDE EXCEEDING 18".

PREFABRICATED EQUIPMENT SUPPORTS:
1. EQUIPMENT BASES
   - A. SOLID TOP EQUIPMENT BASE WITH [INTEGRAL DUCT CURB AND] STEPPED CANT TO MATCH ROOF INSULATION. PITCH BASE TO MATCH ROOF PITCH, PROVIDE LEVEL INSTALLATION.

EXECUTION/INSTALLATION:
1. INSERTS
   - A. USE INSERTS FOR SUSPENDING HANGERS FROM REINFORCED CONCRETE SLABS AND SIDES OF REINFORCED CONCRETE BEAMS.
   - B. SET INSERTS IN POSITION IN ADVANCE OF CONCRETE WORK. PROVIDE REINFORCEMENT ROD IN CONCRETE FOR INSERTS CARRYING PIPE OVER 4" OR DUCTS OVER 60" WIDE.
   - C. WHERE CONCRETE SLABS FORM FINISHED CEILING, FINISH INSERTS FLUSH WITH SLAB SURFACE.
   - D. WHERE INSERTS ARE OMITTED, DRILL THROUGH CONCRETE SLAB FROM BELOW AND PROVIDE ROD WITH RECESSED SQUARE STEEL PLATE AND NUT ABOVE SLAB. OBTAIN WRITTEN PERMISSION OF LOCATION AND PROCEDURE FROM STRUCTURAL ENGINEER PRIOR TO COMMENCING WORK.
2. ANCHORS
   - A. USE ANCHORS FOR SUSPENDING HANGERS FROM REINFORCED CONCRETE SLABS, AND SIDES OF REINFORCED CONCRETE BEAMS.
   - B. REVIEW ANCHOR LOCATIONS, DEPTHS WITH ARCHITECT AND STRUCTURAL ENGINEER BEFORE INSTALLATION.
   - C. INSTALL PER MANUFACTURER'S DESIGN CRITERIA, INSTALLATION INSTRUCTIONS.

DUCT HANGERS AND SUPPORTS:
1. SUPPORT DUCTWORK IN ACCORDANCE WITH INTERNATIONAL MECHANICAL CODE, SMACNA, AND ASHRAE REQUIREMENTS AND RECOMMENDATIONS.

EQUIPMENT BASES:
1. CONCRETE BASES FOR EQUIPMENT WILL BE PROVIDED BY OTHERS ONLY IF SHOWN ON ARCHITECTURAL OR STRUCTURAL DRAWINGS. ALL OTHER BASES SHALL BE PROVIDED BY THIS CONTRACTOR.
2. BASES SHALL BE 4" THICK MINIMUM, EXTENDED 6" BEYOND MACHINERY BEDPLATES. THICKEN CONCRETE AT ANCHOR BOLTS IF IMBEDMENT EXCEEDS 2".
3. SIZE AND LOCATE ALL BASES. FURNISH ALL REQUIRED ANCHOR BOLTS AND SLEEVES.
4. SECURE EQUIPMENT OR VIBRATION ISOLATION DEVICES FOR EQUIPMENT TO BASES WITH ANCHOR BOLTS. ANCHOR BOLTS SHALL BE PROVIDED BY EQUIPMENT MANUFACTURER OR SPECIFIED BY EQUIPMENT MANUFACTURER AND SUPPLIED BY CONTRACTOR. BOLTS SHALL BE SECURELY IMBEDDED IN THE CONCRETE BASE. GROUT MACHINERY UNDER ENTIRE BEARING SURFACE UNLESS ISOLATED FOR VIBRATION. AFTER GROUT HAS SET, REMOVE ALL WEDGES, SHIMS, JACK BOLTS. FILL SPACE WITH NONSHRINKING GROUT. PROVIDE LEAD WASHERS AT EQUIPMENT ANCHOR BOLTS.
5. FABRICATE EQUIPMENT SUPPORTS OF STRUCTURAL STEEL MEMBERS OR STEEL PIPE AND FITTINGS. BRACE AND FASTEN WITH FLANGES BOLTED TO STRUCTURE.

FLASHING AND SAFING:
1. WHERE EXPOSED PIPING AND DUCTWORK PASSES THROUGH WALLS, FLOORS, ROOFS, PROVIDE CHROME PLATED OR STAINLESS STEEL ESCUTCHEON FOR PIPING AND A MINIMUM 26 GAUGE GALVANIZED ANGLE FRAME FOR DUCTWORK. ROLL FRAME TO MATCH THE DIAMETER OF ROUND DUCT.
2. PROVIDE SOUND RATED FLASHING AROUND DUCTS AND PIPES PASSING FROM EQUIPMENT ROOMS, INSTALLED PER MANUFACTURER'S DATA FOR SOUND CONTROL TO MEET THE ATTENUATION SPECIFIED ON ARCHITECTURAL DRAWINGS FOR THE DESIGNATED WALL.
3. FLASH AND COUNTERFLASH WHERE MECHANICAL EQUIPMENT PASSES THROUGH WEATHER- OR WATER-PROOFED WALLS, FLOORS, ROOFS.

SUPPORTS, ANCHORS, SEALS (CONTINUED)

SLEEVES:
1. PROVIDE FRAMED 18 GAUGE GALVANIZED SHEET METAL SLEEVES FOR DUCTWORK. UNLESS OTHERWISE INDICATED, SLEEVES SHALL BE OF SIZE TO PROVIDE FROM 1/4" TO 1" CLEARANCE BETWEEN BARE PIPE OR DUCT AND SLEEVE OR BETWEEN INSULATION JACKET AND SLEEVE. WHERE PIPE OR DUCT PASSES THROUGH CONCRETE FLOOR, EXTEND SLEEVE MINIMUM 1" ABOVE FINISHED FLOOR.
2. SLEEVES IN BEARING WALLS, WATERPROOF MEMBRANE FLOORS, WET AREAS SHALL BE STEEL PIPE OR CAST IRON PIPE FOR SMALL ROUND DUCTS AND PIPES, 16 GAUGE GALVANIZED SHEET METAL FOR DUCTS. SLEEVES IN NON-BEARING WALLS, FLOORS, CEILINGS SHALL BE STEEL PIPE, CAST IRON PIPE, OR GALVANIZED SHEET METAL WITH LOCK-TYPE LONGITUDINAL SEAM.
3. WHERE DUCTS PENETRATE BEARING WALLS (EXCLUDING FOUNDATIONS), FIRE RATED WALLS, PARTITIONS, FLOORS, PACK AND SEAL ENTIRE SPACE BETWEEN DUCT AND SLEEVE WITH DOW CORNING 3-6548 SILICONE RTV FOAM, OR 1" MINIMUM THICKNESS OF 3M FIRE BARRIER, CP-25 CAULK, OR 303 PUTTY ON EACH SIDE OF OPENING.
4. WHERE DUCT PENETRATIONS OCCUR IN NON-FIRE RATED FLOORS OR WALLS, PACK SPACE BETWEEN DUCT AND SLEEVE OR INSULATION INSERT AND SLEEVE ON EACH END WITH MINERAL WOOL OR OTHER NON-COMBUSTIBLE MATERIAL.

MECHANICAL IDENTIFICATION

DUCT IDENTIFICATION
1. WHERE IT WILL ASSIST IN IDENTIFYING OR CORRELATING ZONE SUPPLY AIR DUCTS WITH TEMPERATURE CONTROLS OR OTHERWISE ASSIST IDENTIFICATION, MARK DUCTS AT EQUIPMENT OR IN EQUIPMENT ROOMS WITH DECALS, STENCILS, OR PRESSURE_SENSITIVE LABELS APPROPRIATE FOR SURFACE OF APPLICATION AND OF SIZE EASILY READ FROM FLOOR LEVEL.

EQUIPMENT IDENTIFICATION
1. IDENTIFY EQUIPMENT WITH LAMINATED BLACK PLASTIC TAG WITH ENGRAVED WHITE CORE LETTERING. TAG SHALL INDICATE EQUIPMENT DUTY SUCH AS "FURNACE", "CONDENSING UNIT", AND EQUIPMENT DESIGNATION AS SHOWN ON DRAWINGS. TAGS SHALL HAVE MINIMUM THICKNESS OF 1/16", MINIMUM SIZE OF 1_1/2" X 4", WITH MOUNTING HOLES. SECURE TAGS TO EQUIPMENT BY MEANS OF SCREWS, BOLTS, CHAIN.
2. IDENTIFY EACH THERMOSTAT BY MEANS OF GUN TAG INDICATING CORRESPONDING UNIT WHICH IT CONTROLS. LOCATE TAG INSIDE THE INSTRUMENT COVER.

INSULATION

1. FURNISH AND INSTALL INSULATION FOR ALL DUCTWORK SYSTEMS. LOW PRESSURE DUCTWORK INSULATION: 1" DUCT LINER. MEDIUM PRESSURE DUCTWORK INSULATION: 1-1/2" EXTERIOR DUCT WRAP. ALL EQUIPMENT INSULATION SHALL INCLUDE A VAPOR BARRIER.
2. FURNISH AND INSTALL INSULATION FOR ALL REFRIGERANT PIPING SYSTEMS. REFRIGERANT LIQUID AND INDOOR REFRIGERATED SUCTION PIPING, ALL SIZES: 1" THICKNESS. REFRIGERANT PIPING OUTDOORS, ALL SIZES: 3/4" THICKNESS.

DUCTWORK

A. FLEXIBLE AIR DUCT
1. LISTED UNDER UL-181 STANDARDS AS CLASS I AIR DUCT MATERIAL. MAXIMUM OPERATING PRESSURE 6" W.C., MAXIMUM WORKING VELOCITY 4,000 FPM. MATERIAL SHALL BE APPROVED BY AUTHORITY HAVING JURISDICTION.
2. INSULATED: METAL OR ALUMINUM LAMINATE INNER CORE, 1" THICK 3/4 LB. DENSITY FIBERGLASS INSULATION (MINIMUM "K" VALUE 0.25), METAL OR APPROVED METALLIZED POLYESTER OR SCUFF-RESISTANT FOIL SCRIM OUTER JACKET (MAXIMUM VAPOR TRANSMISSION RATE 0.05 PERMS).
3. NON-INSULATED: DEAD SOFT SPIRAL CORRUGATED ALUMINUM SHEET OR ALUMINUM OVER A STEEL SPRING HELIX.

B. SPIN-IN FITTING: FLARED INLET; MANUAL VOLUME DAMPER AND REGULATOR WHERE NOTED.

C. FABRICATION
1. DUCT PRESSURE AND LEAKAGE CLASSIFICATIONS
2. FABRICATE ALL DUCTWORK PER THE REQUIREMENTS OF THE FOLLOWING PRESSURE CLASSIFICATIONS TABLE.

DUCTWORK PRESSURE CHART

DUCTWORK		MIN. DUCT PRESSURE CLASSIFICATION (W.C.)	MIN. LEAKAGE CLASSIFICATION
VARIABLE AIR VOLUME SUPPLY DUCTWORK	FROM FAN OUTLET TO TERMINAL UNIT		
	RECTANGULAR	4"	6
	ROUND OR OVAL	4"	3
VARIABLE AIR VOLUME SUPPLY DUCTWORK	FROM TERMINAL UNIT TO AIR DEVICES	1"	12
RETURN DUCTWORK		-1"	12
EXHAUST DUCTWORK	FROM AIR DEVICES TO FAN INLET	-1"	6
	FROM FAN OUTLET TO DISCHARGE POINT	1/2"	6

D. MINIMUM LEAKAGE CLASSIFICATION IS AS DEFINED IN THE LATEST EDITION OF THE ASHRAE FUNDAMENTALS HANDBOOK, DUCT DESIGN CHAPTER.

E. MAKE EQUIVALENT DUCT SIZE CHANGES FROM ASHRAE TABLE OF EQUIVALENT RECTANGULAR AND ROUND DUCTS. NO VARIATION OF DUCT CONFIGURATION OR SIZES PERMITTED EXCEPT BY WRITTEN PERMISSION.

F. CROSS BREAK OR BEAD ALL DUCTS IN EXCESS OF 18".

G. LAP METAL DUCTS IN DIRECTION OF AIR FLOW. HAMMER DOWN EDGES AND SLIPS TO LEAVE SMOOTH DUCT INTERIOR. PROVIDE CORNER CLOSURES.

H. BRANCH CONNECTIONS IN RECTANGULAR DUCTWORK SHALL BE 45 DEGREE ENTRY TYPE WITH 4" MINIMUM CONNECTOR LENGTH.

I. CONSTRUCT TEES, BENDS, ELBOWS WITH MINIMUM CENTER LINE RADIUS 1-1/2" TIMES WIDTH OF DUCT. WHERE NOT POSSIBLE AND WHERE RECTANGULAR ELBOWS USED, PROVIDE TURNING VANES.

J. INCREASE DUCT SIZES MAXIMUM 15 DEGREE DIVERGENCE WHEREVER POSSIBLE. MAXIMUM DIVERGENCE: 20 DEGREE UPSTREAM OF EQUIPMENT, 30 DEGREE DOWNSTREAM.

K. RIGIDLY CONSTRUCT METAL DUCTS WITH JOINTS MECHANICALLY TIGHT, AIRTIGHT, BRACED AND STIFFENED.

L. SEAL ALL DUCTWORK (USING LIQUIDS, MASTICS, OR GASKETS, AS APPLICABLE) PER THE FOLLOWING TABLE.

DUCTWORK SEALING CHART

STATIC PRESSURE CLASSIFICATION (W.C.)	REQUIRED SEALING
GREATER THAN 2"	ALL TRAVERSE JOINTS, LONGITUDINAL SEAMS AND DUCT WALL PENETRATIONS
2" AND LESS	TRAVERSE AND LONGITUDINAL JOINTS

M. JOINTS IN RECTANGULAR DUCTWORK MAY BE MADE WITH DUCTMATE SYSTEM, NEXUS 4 BOLT DUCT CONNECTION SYSTEM, OR TDC.

N. WORK INCLUDES ACCESS DOOR, BALANCING DAMPER, FLEXIBLE CONNECTION AND TURNING VANES.

O. ACCESS DOORS SHALL BE UL LABELED. FABRICATE PER ASHRAE AND SMACNA. FURNISH MANUFACTURER'S SUBMITTAL DATA FOR THE ACCESS DOORS, BALANCING DAMPERS, FLEXIBLE CONNECTIONS AND TURNING VANES.

P. ACCESS DOOR SHALL RATED FOR SAME STATIC PRESSURE AS DUCTWORK AND SHALL BE FRAMED, HINGED, GASKETED TYPE WITH SASH LOCKS; FULLY INSULATED.

Q. PROVIDE ACCESS DOORS FOR INSPECTION AND CLEANING BEFORE AND AFTER FILTERS, COILS, FANS, AUTOMATIC DAMPERS, FIRE OR COMBINATION FIRE/SMOKE DAMPERS, AND ELSEWHERE AS INDICATED. REVIEW LOCATIONS WITH ARCHITECT PRIOR TO FABRICATION. PROVIDE 6" X 6" QUICK OPENING ACCESS DOORS FOR INSPECTION AT BALANCING DAMPERS AND TURNING VANES.

R. VOLUME DAMPER SHALL BE MULTIPLE OPPOSED BLADE TYPE, CLOSE FITTED IN DUCTS, SUITABLE FOR STATIC PRESSURE IN DUCTWORK AT INSTALLED LOCATION. DAMPERS 12" OR LESS IN HEIGHT SHALL HAVE SINGLE BLADE. DAMPER BLADES SHALL BE STAMPED 16 GAUGE GALVANIZED STEEL, MAXIMUM LENGTH 48". SHAFT SPACING SHALL NOT EXCEED 9". BEARINGS SHALL BE MOLDED SYNTHETIC. POSITIONING DEVICE SHALL BE LOCKING LEVER AND QUADRANT TYPE, LEVER PARALLEL TO BLADE, LOCKED TO QUADRANT WITH THUMBSCREW OR WING NUT, END OF SHAFT NOTCHED PARALLEL TO DAMPER POSITION. CONSTRUCT DAMPER BLADES FOR MEDIUM AND HIGH PRESSURE SYSTEMS WITH END BEARINGS OR OTHER SEALING DEVICE. SUPPLY LOCKING TYPE HANDLES.

S. NOT ALL BALANCING DAMPERS REQUIRED FOR THE BALANCING WORK ARE SHOWN ON THE DRAWINGS PROVIDE BALANCING DAMPERS AT POINTS ON LOW PRESSURE SUPPLY, RETURN, EXHAUST SYSTEMS WHERE BRANCHES ARE TAKEN FROM LARGER DUCTS AND AS REQUIRED FOR AIR BALANCING. COORDINATE WITH BALANCING CONTRACTOR AND PROVIDE ANY ADDITIONAL BALANCING DAMPERS REQUIRED. INSTALL DAMPERS IN ACCESSIBLE LOCATION.

T. FLEXIBLE CONNECTION SHALL BE NEOPRENE COATED, 30 OZ. FIBERGLASS FABRIC, 6" WIDE, TIGHTLY CRIMPED INTO METAL EDGING STRIP, ATTACHED TO DUCTING AND EQUIPMENT BY SCREWS OR BOLTS AT 6" INTERVALS, PLENUM RATED WHERE REQUIRED. FLEXIBLE CONNECTIONS EXPOSED TO WEATHER SHALL BE COATED WITH DEWPOINT HYPALON.

DUCTWORK (CONTINUED)

U. TURNING VANES SHALL BE INSTALLED IN SUPPLY, RETURN, AND EXHAUST MITERED ELBOWS. THEY SHALL BE FORMED SINGLE WALL (36" MAXIMUM LENGTH) OR DOUBLE WALL (GREATER THAN 36" LENGTH) GALVANIZED STEEL BLADES. FOR METAL DUCTWORK OTHER THAN STEEL USE SAME TYPE MATERIAL AS DUCT. TURNING VANES INSTALLED IN UNEQUAL ELBOWS: ADJUSTABLE TYPE THAT REMAINS ALIGNED TO AIRSTREAM IN ALL POSITIONS.

V. ALL DUCTWORK SHALL BE GALVANIZED SHEET METAL WITH INSULATION PER SPECIFICATIONS. FLEX DUCTS SHALL BE UL-181 LISTED, CLASS 1, FACTORY PRE-INSULATED 1-1/2", WITH INNER LINER AND STEEL HELIX. FLEX DUCTS SHALL NOT BE MORE THAN 5'-0" LONG.

W. PAINT ALL DUCTWORK ABOVE CEILING RETURN GRILLES FLAT BLACK.

X. STATIC FIRE DAMPER
1. STATIC FIRE DAMPERS WITH CURTAIN STYLE BLADES MEETING REQUIREMENTS OF UL STANDARD 555 SIXTH EDITION, GALVANIZED STEEL OR PRIME COATED STEEL. PROVIDE REINFORCEMENT IN CORNERS TO PROVIDE MAXIMUM RESISTANCE TO RACKING.
2. FIRE RESISTANCE: DAMPERS SHALL HAVE A UL 555 FIRE RESISTANCE RATING OF 1-1/2 HOURS.
3. FIRE CLOSURE TEMPERATURE: EACH FIRE DAMPER SHALL BE EQUIPPED WITH A FACTORY INSTALLED HEAT RESPONSIVE DEVICE (FUSIBLE LINK) RATED TO CLOSE THE DAMPER WHEN TEMPERATURE AT THE DAMPER REACHES 165 F.
4. FIRE DAMPERS SHALL HAVE BLADES RETAINED IN A RECESS SO FREE AREA OF CONNECTING DUCTWORK IS NOT REDUCED (TYPE B).

Y. DYNAMIC FIRE DAMPERS
1. DYNAMIC FIRE DAMPERS WITH STEEL 3-V BLADES MEETING REQUIREMENTS OF UL STANDARD 555, SIXTH EDITION. GALVANIZED STEEL OR PRIME COATED BLACK STEEL. PROVIDE REINFORCEMENT TO CORNERS TO PROVIDE MAXIMUM RESISTANCE TO RACKING.
2. FIRE RESISTANCE: DAMPERS SHALL HAVE UL 555 FIRE RESISTANCE RATING OF 1-1/2 HOURS.
3. FIRE CLOSURE TEMPERATURE: EACH FIRE DAMPER SHALL BE EQUIPPED WITH A FACTORY INSTALLED HEAT RESPONSE DEVICE (FUSIBLE LINK) RATED TO CLOSE THE DAMPER WHEN TEMPERATURE AT THE DAMPER REACHES 165 F.
4. DIFFERENTIAL PRESSURE: DAMPERS SHALL HAVE A MINIMUM UL 555 DIFFERENTIAL PRESSURE RATING OF 4 INCHES W.G.
5. VELOCITY: DAMPERS SHALL HAVE A MINIMUM UL 555 VELOCITY RATING OF 3000 FPM.

Z. COMBINATION SMOKE AND FIRE DAMPER
1. COMBINATION FIRE SMOKE DAMPERS WITH STEEL 3-V BLADES MEETING REQUIREMENTS OF UL STANDARD 555, SIXTH EDITION AND UL STANDARD 555S, FOURTH EDITION. ACTUATED BY FUSIBLE LINK AND SMOKE DETECTOR. 6" MAXIMUM BLADE WIDTH. GALVANIZED STEEL OR PRIME COATED BLACK STEEL. REINFORCE CORNERS TO MAXIMIZE RESISTANCE TO RACKING.
2. LEAKAGE RATING: CLASS 1 (DUCT STATIC PRESSURE EXCEEDS 2" W.C.) OR CLASS II (DUCT STATIC PRESSURE LESS THAN 2" W.C.)
3. FIRE RESISTANCE: DAMPERS SHALL HAVE A UL 555 FIRE RESISTANCE RATING OF 1-1/2 HOURS.
4. FIRE CLOSURE TEMPERATURE: EACH COMBINATION FIRE SMOKE DAMPER SHALL BE EQUIPPED WITH A THERMOSTAT TO CLOSE THE DAMPER AT 165 F.
5. DIFFERENTIAL PRESSURE: DAMPERS SHALL HAVE A MINIMUM UL 555S DIFFERENTIAL PRESSURE RATING OF 4 INCHES W.G.
6. VELOCITY: DAMPERS SHALL HAVE A MINIMUM UL 555S VELOCITY RATING OF 3000 FPM.
7. OPERATING SHAFT: 90 DEGREES BETWEEN CLOSED AND OPEN, SUITABLE FOR LINKING TO AND OPERATION BY DAMPER OPERATOR, WITH END SWITCH TO SIGNAL FULL OPEN POSITION.
8. ACTUATORS: TYPE: ELECTRIC, 120 VOLT AC, 60 HZ, 2-POSITION, FAIL CLOSE. EXTERNAL MOUNTED.

AA. PROVIDE ACCESS DOORS FOR INSPECTION AND CLEANING BEFORE AND AFTER FILTERS, COILS, FANS, AUTOMATIC DAMPERS, FIRE OR COMBINATION FIRE/SMOKE DAMPERS, AND ELSEWHERE AS INDICATED. REVIEW LOCATIONS WITH ARCHITECT PRIOR TO FABRICATION.

AB. PROVIDE 6" X 6" QUICK OPENING ACCESS DOORS FOR INSPECTION AT BALANCING DAMPERS AND TURNING VANES.

AC. PROVIDE FIRE OR COMBINATION FIRE/SMOKE DAMPERS AT LOCATIONS SHOWN AND WHERE REQUIRED BY AUTHORITIES HAVING JURISDICTION.

TEMPERATURE CONTROL SYSTEMS

1. ALL CONTROLS TO BE PROVIDED BY AN INDEPENDANT CONTROLS CONTRACTOR.
2. PROVIDE ALL CONTROLS FOR A COMPLETE OPERATIONAL SYSTEM. PROVIDE ALL INTERLOCKS TO EQUIPMENT AS INDICATED OR AS REQUIRED FOR PROPER OPERATION OF THE EQUIPMENT.
3. CONCEAL WIRING WITHIN BUILDING CONSTRUCTION EXCEPT IN MECHANICAL ROOMS AND AREAS WHERE OTHER CONDUIT AND PIPING ARE EXPOSED. INSTALL CONTROL WIRING SYSTEM IN CONDUIT WHERE EXPOSED OR SUBJECT TO DAMAGE. THE USE OF WIREMOLD SHALL NOT BE PERMITTED.
4. ALL CONTROL WIRING SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER PARALLEL TO BUILDING LINES WITH ADEQUATE SUPPORT. BOTH CONDUIT AND PLENUM WIRING SHALL BE SUPPORTED FROM OR ANCHORED TO STRUCTURAL MEMBERS. CONDUIT OR PLENUM WIRING SUPPORTED FROM OR ANCHORED TO PIPING, DUCT SUPPORTS, THE CEILING SUSPENSION SYSTEM, OR THE ELECTRICAL CONDUITS IS NOT ACCEPTABLE.
5. U.L. PLENUM RATED CABLE SHALL BE ALLOWABLE IN AIR PLENUMS AS APPROVED BY LOCAL CODES.
6. INSTALL SYSTEMS, COMPONENTS AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
7. TIME CLOCKS REQUIRED TO COMPLETE THE TEMPERATURE CONTROL SEQUENCES SHALL BE 7-DAY, 24-HOUR ELECTRONIC TYPE. EQUIP TIME CLOCKS WITH BATTERY BACKUP TO MAINTAIN PROGRAMMING IN CASE OF POWER FAILURE.
8. INSTRUCT OWNER'S PERSONNEL IN OPERATION AND MAINTENANCE OF ELECTRIC CONTROL SYSTEMS.

TESTING AND BALANCING

1. WORK INCLUDES TESTING AND BALANCING OF AIR DISTRIBUTION SYSTEMS AND EQUIPMENT AND APPARATUS CONNECTED THERETO. TESTING AND BALANCING SHALL BE RESPONSIBILITY OF ONE FIRM. MINIMUM STANDARDS: CHAPTER 38, 2011 EDITION OF ASHRAE HVAC APPLICATIONS HANDBOOK.
2. CONTRACTOR SHALL PROVIDE TESTING, ADJUSTING, AND BALANCING OF ENVIRONMENTAL SYSTEMS. TESTING AND BALANCING WORK SHALL BE DIRECTLY SUPERVISED AND RESULTS ATTESTED TO BY PROFESSIONAL ENGINEER WHO SHALL REPRESENT TESTING AND BALANCING FIRM IN PROGRESS MEETINGS AS REQUESTED, AND SHALL BE AVAILABLE FOR INTERPRETING MATERIAL IN BALANCE REPORT.
3. DO NOT BEGIN TESTING AND BALANCING WORK UNTIL SYSTEM HAS BEEN COMPLETED AND IS IN FULL WORKING ORDER. PUT SYSTEMS AND EQUIPMENT INTO FULL OPERATION AND CONTINUE OPERATION OF SAME DURING EACH WORKING DAY OF TESTING AND BALANCING. ASCERTAIN PRELIMINARY TAB REQUIREMENTS PRIOR TO COMMENCEMENT OF WORK THROUGH REVIEW OF AVAILABLE DRAWINGS AND SPECIFICATIONS. MAKE VISUAL OBSERVATIONS AT SITE DURING CONSTRUCTION TO DETERMINE LOCATION AND SUITABILITY OF REQUIRED BALANCING DEVICES.
4. BEFORE AIR BALANCE WORK IS STARTED, CHECK SYSTEM FOR DUCT LEAKAGE, UNIMPEDED RETURN AIR PATH, CLEAN FILTERS INSTALLED, CORRECT FAN ROTATION, EQUIPMENT VIBRATION, PROPER OPERATION OF AUTOMATIC DAMPERS, VOLUME CONTROL DAMPERS AND AIR DEVICES OPEN. REPORT ANY DEFICIENCIES TO CONTRACTOR FOR CORRECTION OR RESOLUTION.
5. BALANCE AIR SYSTEMS STATIONS WITH PATH PRESENTING GREATEST RESISTANCE TO THE FLOW, FULLY OPEN AND UNOBSTRUCTED. MAKE ALL NECESSARY SHEAVE REPLACEMENTS TO ACHIEVE ABOVE. DO NOT USE BALANCING DEVICES IN LIEU OF SHEAVE REPLACEMENT TO ACHIEVE DESIGN AIR FLOW.
6. ADJUST ALL AIR DEVICES FOR OPTIMUM, DRAFT-FREE AIR DISTRIBUTION PATTERN. ADJUST LINEAR CEILING DIFFUSERS FOR HORIZONTAL DISCHARGE ALONG THE CEILING AND/OR VERTICAL DISCHARGE AT AN OUTSIDE WALL.
7. INSPECT TEMPERATURE CONTROL SYSTEM FOR PROPER SEQUENCE OF OPERATION AND APPROXIMATE CALIBRATION. REPORT ANY DEFICIENCIES TO CONTRACTOR IMMEDIATELY.
8. BALANCE ALL AIR FLOWS WITHIN 10% OF DESIGN. MEASURE AND RECORD AIR QUANTITIES FOR EACH AIR DEVICE; AIR HANDLING UNITS INCLUDING SUPPLY, RETURN, MIXED, OUTSIDE AIR TEMPERATURES AND FAN DATA INCLUDING CFM, STATIC PRESSURE, RPM, MOTOR RUNNING AND FULL LOAD AMPERAGE BEFORE AND AFTER FINAL BALANCE. SET AIR DIFFUSION PATTERNS TO MINIMIZE OBJECTIONABLE DRAFTS AND NOISE.
9. SUBMIT SIX (6) BOUND COPIES OF FINAL TESTING AND BALANCING REPORT PRIOR TO CONTRACTOR'S REQUEST FOR FINAL INSPECTION, SIGNED BY SUPERVISING ENGINEER AND AFFIXED WITH HIS CERTIFICATION SEAL.
10. PROVIDE TEST AND BALANCE REPORT TO INSPECTOR AT TIME OF HEATING FINAL INSPECTION.
11. SET UP AND CALIBRATE THERMOSTATS. SET THERMOSTAT AT 74 DEG. F +/- 2 DEG. F.
12. UPON COMPLETION OF WORK, SUBMIT INFORMAL DOCUMENTATION TO OWNER ITEMIZING AND DATING ALL PROBLEMS DISCOVERED AND REPORTED TO OWNER'S MAINTENANCE STAFF, AND TIME AND DESCRIPTION OF SOLUTION.

MECHANICAL LEGEND

NOT ALL ITEMS LISTED BELOW ARE USED ON THIS SET OF MECHANICAL DRAWINGS

DOUBLE LINE DUCTWORK

SYMBOL	DESCRIPTION
	RECTANGULAR SUPPLY AIR DUCT UP
	RECTANGULAR SUPPLY AIR DUCT DOWN
	RECTANGULAR RETURN AIR / EXHAUST DUCT UP
	RECTANGULAR RETURN AIR / EXHAUST DUCT DOWN
	ROUND DUCT UP
	ROUND DUCT DOWN
	BRANCH DUCT 45°TAKE-OFF
	RECTANGULAR DUCT ELBOW WITH TURNING VANES
	RADIUS ELBOW RECTANGULAR/ROUND DUCT
	DUCT TRANSITION
	FLEX CONNECTION

CONTROL DEVICES AND DAMPERS

SYMBOL	DESCRIPTION
H	HUMIDISTAT
PS	PRESSURE SENSOR
S	SENSOR
T	WALL MOUNTED THERMOSTAT
	UNIT MOUNTED THERMOSTAT
S	SWITCH
	FIRE DAMPER
	COMBINATION FIRE AND SMOKE DAMPER
	MANUAL VOLUME DAMPER W/LOCKING QUADRANT
	MOTORIZED DAMPER

GENERAL

SYMBOL	DESCRIPTION
EQUIP#	MECHANICAL/ELECTRICAL EQUIPMENT DESIGNATION
	REMOVE EXISTING
	UNDERCUT DOOR
	CONNECT NEW TO EXISTING

PIPING

SYMBOL	ABBV.	DESCRIPTION
PC	PC	PUMPED CONDENSATE
D	D	EQUIPMENT DRAIN
RL	RL	REFRIGERANT LIQUID
RS	RS	REFRIGERANT SUCTION

PIPING SYMBOLS

SYMBOL	DESCRIPTION
	ARROW IN LINE INDICATES DIRECTION OF FLOW
XX	INDICATES PIPE SLOPE DOWN
	BOTTOM PIPE CONNECTION
	PIPING UP
	PIPING DOWN
	PIPING CAP OR PLUG
	PUMP

SINGLE LINE DUCTWORK

SYMBOL	DESCRIPTION
	RECTANGULAR DUCT ELBOW WITH TURNING VANES
	RADIUS ELBOW RECTANGULAR/ROUND DUCT
	DUCT TRANSITION
	CONICAL SPIN-IN FITTING
	CONICAL SPIN-IN FITTING W/DAMPER
	FLEXIBLE DUCT

ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR	MC	MECHANICAL CONTRACTOR	RA	RETURN AIR
AP	ACCESS PANEL	(N)	NEW	RE	REFER TO
C	COMMON	NC	NORMALLY CLOSED	SA	SUPPLY AIR
(E)	EXISTING	NIC	NOT IN CONTRACT	SRV	SAFETY RELIEF VALVE
EC	ELECTRICAL CONTRACTOR	NO	NORMALLY OPEN	TCC	TEMPERATURE CONTROL CONTRACTOR
ELEV	ELEVATION	NTS	NOT TO SCALE	TYP	TYPICAL
EQ	EQUIPMENT	OA	OUTSIDE AIR		
GC	GENERAL CONTRACTOR	PRV	PRESSURE REDUCING VALVE		

NOTE:

GENERAL NOTES

1. ALL LOW PRESSURE MAIN OR TRUNK DUCT DIMENSIONS INCLUDE 1" DUCT LINER INSULATION AND ARE OUTSIDE DUCT DIMENSION. IF DUCTWRAP IS TO BE USED FOR DUCT INSULATION, 2" MAY BE REMOVED IN BOTH WIDTH AND HEIGHT FROM DUCT SIZES SHOWN ON PLAN.
2. ALL MEDIUM PRESSURE MAIN, TRUNK, AND BRANCH DUCT DIMENSIONS SHOWN ON PLAN ARE CLEAR INSIDE AIR FLOW DIMENSIONS.

MECHANICAL SHEET INDEX

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ISSUE:

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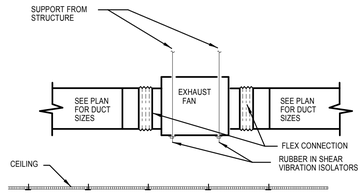
SHEET TITLE:

MECHANICAL LEGEND AND SPECIFICATIONS

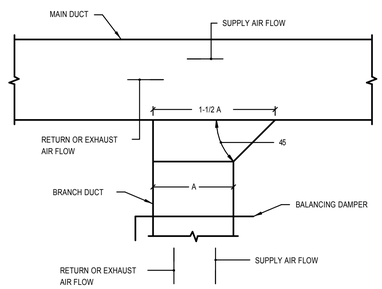
M-100

SHEET OF



IN-LINE EXHAUST FAN DIAGRAM

NOT TO SCALE



DUCT TAKE-OFF DIAGRAM

NOT TO SCALE

FAN SCHEDULE

SYMBOL	MANUFACTURER	MODEL	FAN TYPE	SERVICE	CFM @ 5300'	S.P. IN W.C. @ S.L.	ELECTRICAL DATA VOLT/ PHASE	RPM	WATTS	DRIVE TYPE	DAMPER TYPE	SONES	WEIGHT (LBS)	REMARKS
EF-1	GREENHECK	CSP-A1410	INLINE	EXHAUST	1200	0.5	120/1	120	822	DIRECT	BACKDRAFT	2.5	60	1, 2, 3, 4

REMARKS:

1. ACCEPTABLE MANUFACTURERS INCLUDE: ACME, CARNES, COOK, PENN, AND SOLER & PALAU.
2. PROVIDE FAN WITH UNIT MOUNTED SPEED CONTROL SWITCH.
3. PROVIDE WITH DISCHARGE DUCT COLLAR.
4. FAN CONTROLLED VIA LIGHT OCCUPANCY SENSOR. FAN SHALL RUN FOR 15 MINUTES AFTER LIGHTS SHUT-OFF.

SPECIFICATION (INLINE – MOTOR INSIDE):

A. HOUSING: ACOUSTICALLY INSULATED STEEL.
B. FAN WHEEL: CENTRIFUGAL TYPE.
C. FAN WHEEL AND MOTOR ASSEMBLY: MOUNT ON VIBRATION ISOLATORS; TOTALLY REMOVABLE FROM HOUSING.

AIR DEVICE SCHEDULE

SYMBOL	TYPE	MANUFACTURER	MODEL	FRAME	MATERIAL	FINISH	DAMPER TYPE	ACCESSORIES	REMARKS
EG-1	EXHAUST GRILLE	PRICE	530	LAY-IN	STEEL	WHITE POWDER COAT	NONE	NONE	45° DEFLECTION, 3/4" SPACING 8x8
TG-1	TRANSFER GRILLE	PRICE	PDDR	LAY-IN	STEEL	WHITE POWDER COAT	NONE	NONE	24x24 FACE 14" NECK.

NOTES:

1. EQUIPMENT SCHEDULE BASED ON PRICE. ACCEPTABLE MANUFACTURERS: CARNES, KRUGER, METAL-AIRE, PRICE, TITUS
2. MAX NC RATING 30, PROVIDE NECESSARY FRAME AND TRIM FOR CEILING APPLICATION.

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PROJECT:

CS AUDITORIUM RESTROOM RENOVATION

221 E Kiowa St Colorado Springs, CO 80903

OWNER:

COLORADO SPRINGS CITY AUDITORIUM

221 E Kiowa St
Colorado Springs, CO 80903

ISSUE:

10/16/2015	BIDDING AND ISSUE FOR CONSTRUCTION

DRAWING INFORMATION:

PROJECT NO:	15242
DRAWN BY:	MBJ
CHECKED BY:	MAB
APPROVED BY:	MCS

SHEET TITLE:

MECHANICAL SCHEDULES AND DIAGRAMS

M-101

SHEET OF

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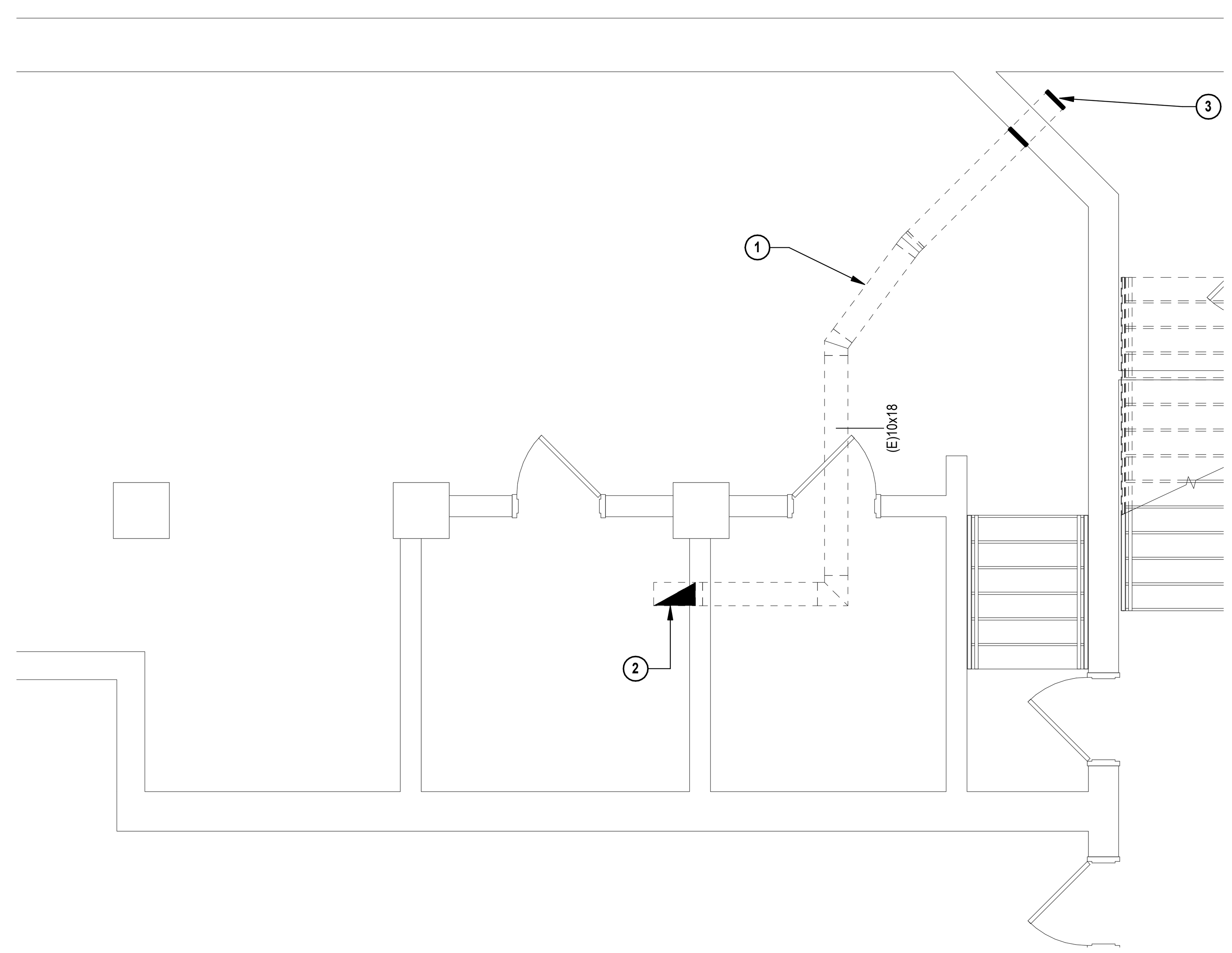
GENERAL NOTES:

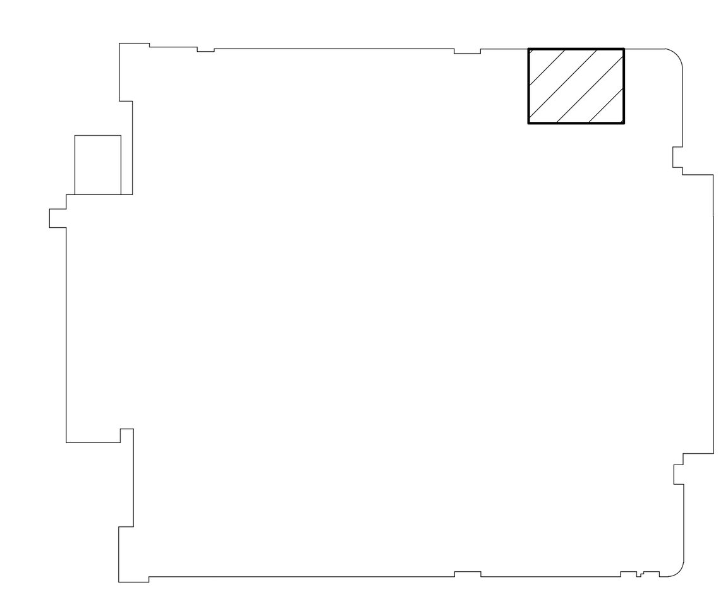
1. CONTRACTOR TO VERIFY ALL EXISTING CONDITIONS BEFORE COMMENCING WORK AND NOTIFY ARCHITECT AND ENGINEER IN WRITING OF DESCREPANCIES FROM THE CONTRACT DRAWINGS. COMMENCEMENT OF WORK WITHOUT NOTIFICATION CONSTITUTES ACCEPTANCE OF EXISTING CONDITIONS.
2. COORDINATE ALL DEMOLITION AND NEW WORK WITH ALL OTHER DIVISIONS AS REQUIRED TO PROVIDE A COMPLETE INSTALLATION.

◯ DRAWING NOTES:

1. REMOVE EXISTING EXHAUST DUCTWORK ASSOCIATED WITH TOILET ROOM ABOVE. TOILET ROOM ABOVE WILL BE REMODELED. RE: M-111. CAP DUCTWORK.
2. REMOVE EXISTING EXHAUST DUCT UP TO REMODELED TOILET ROOM ABOVE. RE: M-111.
3. EXISTING EXHAUST DUCT AND FAN SYSTEM FOR BASEMENT TOILET ROOMS TO REMAIN.



N **ENLARGED BASEMENT MECHANICAL PLAN**
SCALE: 1/4" = 1'-0"



Key Plan

SLATERPAULL
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COLORADO REGISTERED PROFESSIONAL ENGINEER MARK C. SCOTT 26792

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SHEET TITLE:
ENLARGED BASEMENT MECHANICAL PLAN

M-110
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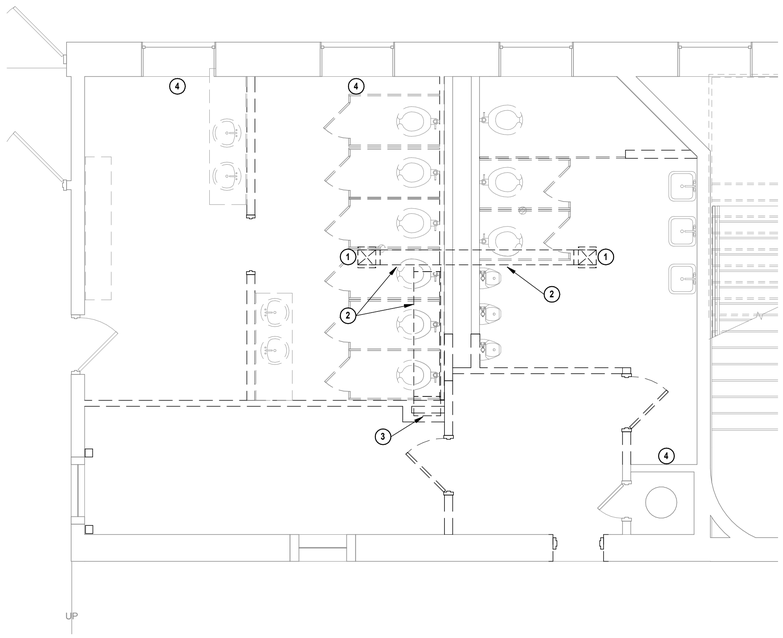
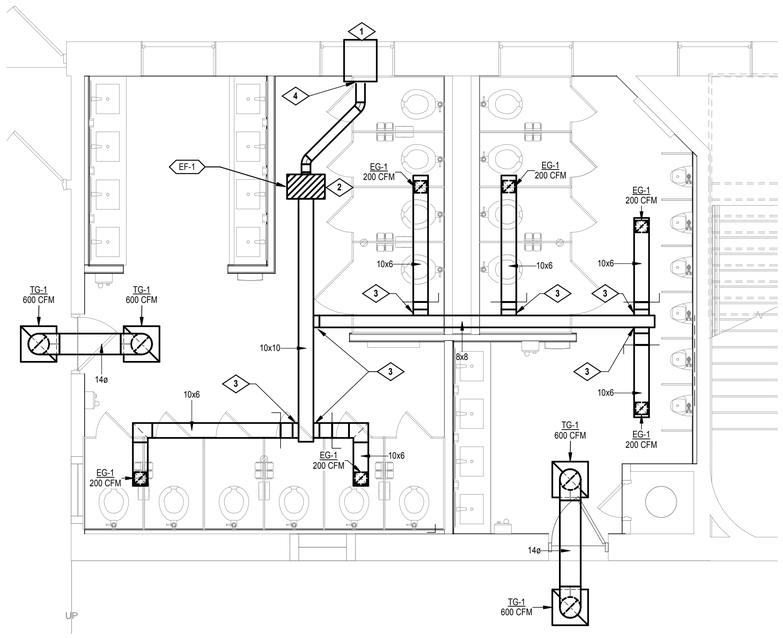


LEVEL 1 ENLARGED RESTROOM MECHANICAL DEMO PLAN

SCALE: 1/4" = 1'-0"



LEVEL 1 ENGLARGED RESTROOM MECHANICAL PLAN

SCALE: 1/4" = 1'-0"

○ DRAWING NOTES:

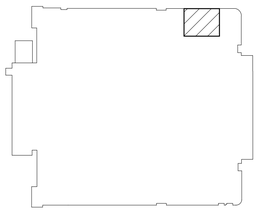
1. REMOVE EXISTING EXHAUST GRILLE AND ASSOCIATED DUCTWORK.
2. REMOVE EXISTING EXHAUST DUCTWORK.
3. REMOVE EXISTING EXHUAST DUCTWORK DOWN TO BASEMENT. RE: M-110.
4. EXISTING RADIANT HEATERS TO REMAIN. CONTRACTOR TO INSPECT FOR PROPER WORKING ORDER AND REPORT.

GENERAL NOTES:

1. CONTRACTOR TO VERIFY ALL EXISTING CONDITIONS BEFORE COMMENCING WORK AND NOTIFY ARCHITECT AND ENGINEER IN WRITING OF DESCREPANCIES FROM THE CONTRACT DRAWINGS. COMMENCEMENT OF WORK WITHOUT NOTIFICATION CONSTITUTES ACCEPTANCE OF EXISTING CONDITIONS.
2. COORDINATE ALL DEMOLITION AND NEW WORK WITH ALL OTHER DIVISIONS AS REQUIRED TO PROVIDE A COMPLETE INSTALLATION.

◇ DRAWING NOTES:

1. LOUVER PROVIDED BY DIVISION 8. PROVIDE MINIMUM 1.5 SQUARE FEET FREE AREA.
2. SUSPEND FAN FROM STRUCTURE ABOVE ACCESSIBLE CEILING. LOCATE FAN IN LOCATION FOR EASE OF MAINTENANCE. FIELD VERIFY.
3. PROVIDE DUCT TAKE-OFF, TYPICAL.
4. PLENUM ON BACK OF LOUVER.



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COLORADO REGISTERED MARK C. STUTZ PROFESSIONAL ENGINEER

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SHEET TITLE:

ENLARGED FIRST LEVEL MECHANICAL PLANS

M-111

SHEET OF

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DIVISION 220000 - PLUMBING SPECIFICATIONS

BASIC MECHANICAL REQUIREMENTS

QUALITY ASSURANCE:
1. IF MANUFACTURER'S MATERIAL OR EQUIPMENT IS LISTED IN SCHEDULES OR ON DRAWINGS, THEY ARE TYPES TO BE PROVIDED FOR ESTABLISHMENT OF SIZE, CAPACITY, GRADE, AND QUALITY. IF OTHER ACCEPTABLE MANUFACTURERS ARE USED, COST OF ANY CHANGE IN CONSTRUCTION REQUIRED BY THEIR USE SHALL BE BORNE BY CONTRACTOR.
2. EQUIPMENT SHALL CONFORM TO STATE AND/OR LOCAL ENERGY CONSERVATION STANDARDS.
3. COMPLY WITH RULES AND REGULATIONS OF LOCAL UTILITY COMPANIES. INCLUDE COST OF VALVES, VALVE BOXES, METER BOXES, METERS, ACCESSORY EQUIPMENT REQUIRED FOR PROJECT.

INTENT AND INTERPRETATIONS:
1. IT IS THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS TO RESULT IN A COMPLETE MECHANICAL INSTALLATION IN COMPLETE ACCORDANCE WITH ALL APPLICABLE LOCAL CODES AND ORDINANCES.
2. DRAWINGS ARE DIAGRAMMATIC IN CHARACTER AND DO NOT NECESSARILY INDICATE EVERY REQUIRED PIPE, OFFSET, TRANSITION, ETC. ITEMS NOT SPECIFICALLY MENTIONED IN THE SPECIFICATION OR NOTED ON THE DRAWINGS, BUT WHICH ARE NECESSARY TO MAKE A COMPLETE WORKING INSTALLATION, SHALL BE INCLUDED.
3. DRAWINGS AND SPECIFICATIONS ARE COMPLEMENTARY. WHATEVER IS CALLED FOR IN EITHER IS BINDING AS THOUGH CALLED FOR IN BOTH. IF THERE IS A CONFLICT IN THE CONTRACT DOCUMENTS, THE MORE DEMANDING AND COSTLY DESIGN SHALL BE SELECTED FOR BIDDING PURPOSES. THE CONTRACTOR SHALL IMMEDIATELY PRESENT THE CONFLICT FOUND IN THE CONTRACT DOCUMENTS TO THE ARCHITECT/ENGINEER FOR RESOLUTION. IF THE RESOLUTION FAVORS A LESS COSTLY DESIGN, THE CONTRACTOR WILL BE REQUIRED TO REIMBURSE THE DIFFERENCE IN COST.
4. DRAWINGS SHALL NOT BE SCALED FOR ROUGH-IN MEASUREMENTS OR USED AS SHOP DRAWINGS. WHERE DRAWINGS ARE REQUIRED FOR THESE PURPOSES OR HAVE TO BE MADE FROM FIELD MEASUREMENTS, TAKE THE NECESSARY MEASUREMENTS AND PREPARE THE DRAWINGS.
5. BEFORE ANY WORK IS INSTALLED, DETERMINE THAT EQUIPMENT WILL PROPERLY FIT THE SPACE, THAT REQUIRED CLEARANCES CAN BE MAINTAINED AND THAT EQUIPMENT CAN BE LOCATED WITHOUT INTERFERENCES BETWEEN SYSTEMS, WITH STRUCTURAL ELEMENTS, OR WITH THE WORK OF OTHER TRADES.
6. IF CONFLICTS ARE DISCOVERED IN CONTRACT DOCUMENTS AS WORK PROGRESSES, SUBMIT A SET OF DRAWINGS MARKED WITH RED PENCIL SHOWING RECOMMENDED MODIFICATIONS TO THE ARCHITECT FOR APPROVAL PRIOR TO INSTALLATION.
7. CONTRACTOR SHALL COORDINATE WITH ALL OWNER SUPPLIED EQUIPMENT PRIOR TO ROUGH-IN. ENSURE ALL EQUIPMENT CONNECTIONS ARE PROVIDED FOR AND THAT THE INSTALLATION WILL MEET ALL LOCAL AND NATIONAL CODE REQUIREMENTS.

JOB CONDITIONS:
CONFER, COOPERATE, AND COORDINATE WORK WITH OTHER TRADES. COORDINATE CEILING CAVITY SPACE CAREFULLY WITH ALL TRADES. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR AND HAVE CONTROL OVER CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES AS WELL AS COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT, UNLESS THE CONTRACT DOCUMENTS GIVE OTHER SPECIFIC INSTRUCTIONS CONCERNING THESE MATTERS.

PERMITS AND FEES:
1. ARRANGE AND PAY FOR ALL INSPECTIONS, PERMITS, LICENSES, CERTIFICATES, AND FEES REQUIRED IN CONNECTION WITH WORK.

SUBMITTALS AND SHOP DRAWINGS:
1. CONFORM TO REQUIREMENTS OF DIVISION 1 AND FOLLOWING PARAGRAPHS.
2. SUBMITTALS SHALL INCLUDE CATALOG CUT-SHEETS AND MANUFACTURER'S DATA SHEETS,
3. PRIOR TO ORDERING EQUIPMENT OR BEGINNING INSTALLATION WORK, ASSEMBLE, PREPARE, AND FURNISH SUBMITTALS AND SHOP DRAWINGS REQUIRED FOR PROJECT. FURNISH SUBMITTALS AND SHOP DRAWINGS AS REQUIRED BY INDIVIDUAL SECTIONS OF SPECIFICATIONS.
4. CONTRACTOR SHALL THOROUGHLY CHECK SUBCONTRACTORS' OR VENDORS' SUBMITTALS AND SHOP DRAWINGS AND, AFTER APPROVING THEM, SUBMIT THEM FOR REVIEW. SUBMITTALS AND SHOP DRAWINGS THAT DO NOT BEAR CONTRACTOR'S REVIEW STAMP WILL BE RETURNED NOT REVIEWED.
5. IF DISCREPANCIES BETWEEN SUBMITTALS, SHOP DRAWINGS, AND CONTRACT DOCUMENTS ARE DISCOVERED EITHER PRIOR TO OR AFTER SUBMITTALS AND SHOP DRAWINGS ARE REVIEWED, REQUIREMENTS OF CONTRACT DOCUMENTS SHALL TAKE PRECEDENCE. SUBMITTALS AND SHOP DRAWINGS WHICH ARE SUBMITTED, BUT WHICH ARE NOT REQUIRED BY CONTRACT DOCUMENTS, WILL BE RETURNED NOT REVIEWED.
6. SUBMITTALS AND SHOP DRAWINGS SHALL IDENTIFY SPECIFIC EQUIPMENT WITH NUMBERS OR LETTERS IDENTICAL TO THOSE LISTED OR SCHEDULED ON THE DRAWINGS OR SPECIFICATIONS.

RECORD DOCUMENTS:
1. KEEP IN CUSTODY DURING ENTIRE PERIOD OF CONSTRUCTION, A CURRENT SET OF DOCUMENTS INDICATING CHANGES THAT HAVE BEEN MADE TO THE CONTRACT DOCUMENTS.
2. UPON COMPLETION OF WORK, SUBMIT THE COMPLETE SET OF RECORD DOCUMENTS TO THE ARCHITECT.

PROTECTION OF EQUIPMENT:
1. PROTECT MATERIALS AND EQUIPMENT FROM PHYSICAL DAMAGE, CONSTRUCTION DIRT, AND THE ELEMENTS FROM TIME OF SHIPMENT TO TIME INSTALLATION IS ACCEPTED BY OWNER.

GUARANTEE:
1. GUARANTEE MATERIALS, WORKMANSHIP, AND OPERATION OF EQUIPMENT INSTALLED FOR PERIOD OF ONE YEAR FROM DATE OF ACCEPTANCE OF ENTIRE WORK. REPAIR OR REPLACE ANY PART OF WORK WHICH SHOWS DEFECT DURING THAT TIME.
2. BE RESPONSIBLE FOR DAMAGE TO PROPERTY OF OWNER OR TO WORK OF OTHER CONTRACTORS DURING CONSTRUCTION AND GUARANTEE PERIOD.
3. FURNISH EQUIPMENT WARRANTIES TO OWNER.

MECHANICAL EQUIPMENT WIRING AND CONNECTIONS:
1. VOLTAGE CHARACTERISTICS SHALL BE AS IN ELECTRICAL DIVISION OF SPECIFICATIONS AND ON ELECTRICAL DRAWINGS.

TEMPORARY FACILITIES:
1. USE OF EXISTING EQUIPMENT FOR TEMPORARY HEATING OR COOLING: DO NOT USE NEW OR EXISTING BUILDING EQUIPMENT WITHOUT WRITTEN PERMISSION FROM OWNER.

INSPECTIONS:
1. DO NOT COVER UP OR ENCLOSE WORK UNTIL INSPECTED, TESTED, AND APPROVED. ANY WORK ENCLOSED OR COVERED UP BEFORE SUCH APPROVAL SHALL BE UNCOVERED, TESTED, AND APPROVED.

ACCESS DOORS:
1. FURNISH HINGED STEEL ACCESS DOORS WITH CONCEALED LATCH, WHETHER SHOWN OR NOT, IN WALLS AND PLASTER OR GYPSUM BOARD CEILINGS FOR ACCESS TO CONCEALED VALVES, SHOCK ARRESTERS, AIR VENTS, MOTORS, FANS, BALANCING VALVES, OR OTHER OPERATING DEVICES REQUIRING ADJUSTMENT OR SERVICING.
2. ACCESS DOOR SHALL BE SIZE OF EQUIPMENT TO BE REMOVED OR 24" BY 24" IF USED FOR SERVICE ONLY.

INSTALLATION:
1. WORKMANSHIP SHALL BE FIRST QUALITY. APPEARANCE OF WORK SHALL BE OF EQUAL IMPORTANCE TO ITS MECHANICAL OPERATION. LACK OF QUALITY WORKMANSHIP SHALL BE REASON FOR REJECTION OF SYSTEM IN PART OR IN WHOLE.
2. INSTALL SO THAT ALL VALVES AND EQUIPMENT CAN BE EASILY ACCESSED AND SERVICED BY ADEQUATE CLEARANCE, INSTALLATION OF ACCESS DOORS, UNIONS IN PIPING, OR OTHER METHODS.
3. COMPLETE INSTALLATION SHALL FUNCTION SMOOTHLY AND NOISELESSLY.
4. INSTALL EQUIPMENT AND MATERIALS PER MANUFACTURERS' RECOMMENDATIONS AND LOCAL CODES OR REGULATIONS.
5. PLACE OR REPLACE ALL EQUIPMENT NAMEPLATES WHERE THEY CAN BE SEEN AND READ WITHOUT DIFFICULTY.
6. FLUSH PIPES FREE OF FOREIGN SUBSTANCES BEFORE INSTALLING VALVES OR MAKING FINAL CONNECTIONS. CLEAN ALL PIPING AND EQUIPMENT.

COMPLETION:
1. CLEAN INSULATION COVERING, PIPES, EQUIPMENT, AND ACCESSORIES TO RECEIVE PRIME COAT OF PAINT. CLEAN EQUIPMENT RECEIVED WITH PRIME COAT TO RECEIVE FINAL COAT.
2. INSTRUCT OWNER IN OPERATION AND MAINTENANCE OF PLUMBING SYSTEMS. MINIMUM PARTICIPANTS SHALL INCLUDE PLUMBING CONTRACTOR AND CONTROLS CONTRACTOR REPRESENTATIVES.
3. AFTER TESTS AND ADJUSTMENTS HAVE BEEN MADE AND SYSTEMS PRONOUNCED SATISFACTORY FOR PERMANENT OPERATION, REFINISH DAMAGED FINISH AND LEAVE EVERYTHING IN PROPER WORKING ORDER AND APPEARANCE.
4. ON COMPLETION OF WORK, REMOVE TOOLS, SCAFFOLDING, DEBRIS, ETC., FROM GROUNDS AND LEAVE PREMISES CLEAN.

BASIC MECHANICAL REQUIREMENTS (CONTINUED)

OPERATION AND MAINTENANCE MANUALS:
1. PRIOR TO COMPLETION OF PROJECT SUBMIT OPERATION AND MAINTENANCE MANUALS FOR MECHANICAL EQUIPMENT WITH MOVING OR MOVABLE PARTS, INCLUDING PLUMBING SYSTEMS, PER IECC. INSTRUCTIONS SHALL BE IN PAMPHLET, TYPEWRITTEN OR PDF FORM. INSTRUCTIONS FOR EACH PIECE OF EQUIPMENT SHALL BE INDICATED BY A SEPARATE TAB.
2. INCLUDE STARTING, STOPPING, LUBRICATION, PREVENTATIVE MAINTENANCE SCHEDULE, AND ADJUSTMENT INFORMATION FOR EACH PIECE OF EQUIPMENT.

PIPE AND PIPE FITTINGS

QUALITY ASSURANCE
- A. WELDING MATERIALS AND LABOR SHALL CONFORM TO ASME CODE FOR PRESSURE PIPING AND APPLICABLE STATE LABOR REGULATIONS.
- B. USE WELDERS FULLY QUALIFIED AND LICENSED BY STATE AUTHORITIES. FURNISH CERTIFICATION FROM APPROVED TESTING AGENCY OR NATIONAL CERTIFIED PIPE WELDING BUREAU THAT WELDERS PERFORMING WORK ARE CERTIFIED.
- C. ALL PIPING MATERIALS SHALL COMPLY WITH LOCAL CODES.

UNIONS AND COUPLINGS
- A. 2" AND SMALLER: 125 PSI CAST IRON FOR THREADED FERROUS PIPING; BRONZE FOR COPPER OR BRASS PIPE, SOLDERED JOINTS.
- B. 2-1/2" AND LARGER: 150 PSI FORGED STEEL FLANGES, RAISED FACE WITH WELDING NECK, FOR FERROUS PIPING; BRONZE FLANGES FOR COPPER OR BRASS PIPING. GASKETS FOR WATER PIPING TO 140 F EQUAL TO GARLOCK PREMIUM GRADE STYLE 22 RED RUBBER, 1/16" THICK. GASKETS FOR NATURAL GAS EQUAL TO GARLOCK BLUE-GARD STYLE 3000 SYNTHETIC FIBER WITH NITRILE BINDER, 1/16" THICK. GASKETS FOR CONDENSATE, AND WATER ABOVE 140 F AS MANUFACTURED BY FLEXITALLIC.
- C. DIELECTRIC UNIONS AND FLANGES: EPCO OR EQUAL HAVING PROPER GASKET MATERIAL FOR CONNECTION OF DISSIMILAR METALS. UNIONS, 2" AND SMALLER; DIELECTRICALLY GASKETED FLANGES, 2-1/2" AND LARGER. USE DIELECTRIC CONNECTIONS WHEREVER JOINING DISSIMILAR METALS IN OPEN DOMESTIC WATER SYSTEMS.

EXECUTION
- A. VERIFY LOCATION(S) OF ALL AIR PLENUMS. ALL PIPING AND SUPPORT MATERIALS INSTALLED IN AIR PLENUMS SHALL BE PLENUM-RATED. DO NOT INSTALL SPECIFIED NON-PLENUM-RATED MATERIALS IN AIR PLENUMS; USE PLENUM-RATED OPTIONS.
- B. ROUTE PIPING IN ORDERLY MANNER AND MAINTAIN PROPER SLOPE.
- C. CONCEAL PIPING IN WALLS OR ABOVE CEILING UNLESS OTHERWISE NOTED.
- D. MAINTAIN FOLLOWING PIPE SLOPES UNLESS OTHERWISE NOTED ON DRAWINGS:
  - COOLING COIL CONDENSATE DRAIN PIPING: 1/8" DOWN PER LINEAR FOOT IN THE DIRECTION OF FLOW.
  - SANITARY WASTE 2-1/2" AND SMALLER: 1/4" DOWN PER 1'-0" IN DIRECTION OF FLOW.
  - SANITARY WASTE 3" AND LARGER: 1/8" DOWN PER 1'-0" IN DIRECTION OF FLOW.
  - GREASE WASTE: 1/4" DOWN PER 1'-0" IN DIRECTION OF FLOW.
  - SANITARY VENT PIPING, ALL SIZES: GRADED AND CONNECTED AS TO DRIP BACK BY GRAVITY TO THE DRAINAGE PIPE IT SERVES.
  - STORM DRAIN PIPING, ALL SIZES: 1/8" DOWN PER 1'-0" IN DIRECTION OF FLOW.
- E. INSTALL PIPING TO ALLOW FOR EXPANSION AND CONTRACTION WITHOUT STRESSING PIPE OR CONNECTED EQUIPMENT.
- F. PROVIDE CLEARANCE FOR INSTALLATION OF INSULATION AND FOR ACCESS TO VALVES, AIR VENTS, DRAINS, UNIONS.
- G. INSTALL SAME TYPE PIPING MATERIAL SPECIFIED FOR INSIDE BUILDING TO 5'-0" OUTSIDE BUILDING.
- H. MAKE CONNECTIONS TO EQUIPMENT WITH UNIONS OR FLANGES.

STEEL PIPE CONNECTIONS
- A. 2" AND SMALLER - THREADED; 2-1/2" AND LARGER - WELDED.
- B. DO NOT USE MITERED AND WELDED ELBOWS IN LIEU OF FITTINGS.
- C. DIE CUT THREADED JOINTS WITH FULL CUT STANDARD TAPER PIPE THREADS WITH 1/2" WIDE WHITE TEFLON PIPE JOINT SEALANT TAPE APPLIED TO MALE THREADS ONLY.
- D. USE ONLY MALLEABLE IRON THREADED PIPE FITTINGS FOR GAS PIPING.
- E. USE BUTT WELD FITTINGS FOR WELDED STEEL PIPES. USE OXYACETYLENE OR ELECTRIC ARC PROCESS.

CAST IRON PIPE CONNECTIONS
- A. JOINTS FOR BELL AND SPIGOT PIPES: NEOPRENE GASKETING SYSTEM WITH "TY-SEAL" WATER SOLUBLE LUBRICANT.
- B. JOINTS FOR PLAIN END PIPE ABOVE GRADE: STAINLESS STEEL BAND TYPE GASKET AND CLAMP MECHANICAL FASTENER.
- C. USE HUBLESS PIPING ABOVE GRADE ONLY.

COPPER PIPE CONNECTIONS
- A. 2-1/2" AND SMALLER: USE 15% SILVER BRAZING ALLOY AND SILVER BRAZING FLUX ON BELOW-GRADE JOINTS. USE 95% TIN, 5% ANTIMONY LEAD-FREE SOLDER AND ASTM B813-91 NON-CORROSIVE STM 1.0 FLUX ON JOINTS. APPLY FLUX ON CLEANED END OF PIPE AND INSIDE FITTINGS WITH SMOOTH EVEN COATS.
- B. 3" AND LARGER: USE 15% SILVER BRAZING ALLOY AND SILVER BRAZING FLUX. APPLY FLUX ON CLEANED END OF PIPE AND INSIDE FITTINGS WITH SMOOTH EVEN COATS.

APPLICATION OF PIPING SYSTEMS:

SERVICE	MATERIAL
EQUIPMENT DRAINS AND OVERFLOWS	COPPER, TYPE M OR DWV, HARD DRAWN
SANITARY DRAIN AND VENT ABOVE SLAB-ON-GRADE	COPPER, TYPE DWV, HARD DRAWN; CAST IRON; SCH 40 PVC (PVC NOT ALLOWED IN ANY RETURN AIR PLENUM)
SANITARY DRAIN AND VENT, BELOW SLAB-ON-GRADE INSIDE BUILDING	CAST IRON; SCHEDULE 40 PVC (PVC NOT ALLOWED IN ANY RETURN AIR PLENUM)
STORM DRAIN INSIDE BUILDING	CAST IRON; SCHEDULE 40 PVC (PVC NOT ALLOWED IN ANY RETURN AIR PLENUM)
DOMESTIC WATER UNBURIED	COPPER, TYPE L, HARD DRAWN CROSS-LINKED POLYETHYLENE (PEX) ASTM F877 FOR DOMESTIC HOT AND COLD WATER
DOMESTIC WATER BURIED	COPPER, TYPE K, HARD DRAWN CROSS-LINKED POLYETHYLENE (PEX) ASTM F877 FOR DOMESTIC HOT AND COLD WATER
DOMESTIC WATER EXPOSED AT FIXTURES	SEAMLESS BRASS PIPE, CHROME PLATED
GAS PIPING	SCHEDULE 40 BLACK STEEL

CAST IRON PIPING AND FITTINGS:
- A. CAST IRON PIPING SHALL BEAR THE COLLECTIVE TRADEMARK OF THE CAST IRON SOIL PIPE INSTITUTE (CISPI) AND LISTED BY NSF INTERNATIONAL..
- B. HUBLESS STANDARD DUTY CAST IRON PIPE AND FITTINGS SHALL CONFORM TO CISPI 310 AND LISTED BY NSF INTERNATIONAL.

UNDERGROUND PIPE INSTALLATION
- A. PROTECT STEEL PIPE INSTALLED BELOW GRADE AND TO MINIMUM 6" ABOVE GRADE WITH FACTORY APPLIED COVERING, PRO-CO FELT AND PIPE LINE ENAMEL NO. 4 DOUBLE WRAP OR X-TRU-COAT PLASTIC COATING. PROTECT FIELD JOINTS ON STEEL PIPE BY WITH TAPECOAT COMPANY PRIME COAT AND ONE LAYER OF TAPECOAT #20 HEAT APPLIED, 62 MIL TAPE PER MANUFACTURER'S RECOMMENDATIONS.
- B. PROVIDE THRUST BLOCK AT ALL DIRECTION CHANGES ON PRESSURE PIPE.
- C. BURY ALL OUTSIDE WATER PIPING MINIMUM 5'-0" BELOW GRADE TO TOP OF PIPE.
- D. BURY ALL OUTSIDE GAS PIPING MINIMUM 1'-6" BELOW GRADE TO TOP OF PIPE.

VALVES

SUBMITTALS
- A. FURNISH MANUFACTURER'S SUBMITTAL DATA FOR VALVES.
- B. VALVES SHALL BE OF SAME MANUFACTURER WHERE POSSIBLE. VALVE SEATS AND MATERIALS SHALL BE SUITABLE FOR SERVICE INTENDED.

ACCEPTABLE MANUFACTURES
- A. BALL VALVE: APOLLO, KITZ, NIBCO.
- B. GAS VALVE: DEZURIK.

RATINGS
- A. UNLESS OTHERWISE INDICATED, VALVES SHALL BE SUITABLE FOR 200 PSIG WOG AND 250

SHUTOFF VALVE
- A. BALL VALVE, ALL SIZES: TWO-PIECE BRONZE OR FORGED BRASS BODY WITH PTFE SEATS, PRESSURE RATED TO 150 SWP/600 WOG, FULL PORT, BLOWOUT-PROOF STEM AND POSITIVE SHUT-OFF. PACKING GLAND WITH PTFE PACKING. STEM EXTENSION WHERE INSULATED, LOCKABLE HANDLE.

VALVES (CONTINUED)

BALANCING VALVE
- A. FULL PORTED BALL VALVE WITH BALANCING STOPS.

CHECK VALVE
- A. 2" AND SMALLER: BRONZE, SWING DISC, SOLDER OR THREADED ENDS.
- B. 2-1/2" AND LARGER: IRON BODY, BRONZE TRIM, SWING DISC, RENEWABLE DISC AND SEAT, FLANGED ENDS.
- C. SPRING LOADED, SILENT TYPE, CAST IRON BODY WITH BUNA-N SEATS SUITABLE FOR 250F. WAFER AND DISCS OF ALUMINUM, BRONZE, OR DUCTILE IRON. SHAFT AND SPRINGS TYPE 316 STAINLESS STEEL.

GAS VALVE
- D. IRON OR FORGED BRASS BODY INDOORS, BRONZE OR FORGED BRASS BODY OUTDOORS.
- E. FORGED BRASS BALL VALVE. CERTIFIED TO CSA, ASME B16.33, AND UL FOR GAS PIPING SYSTEMS.

DRAIN VALVE
- A. BALL VALVE WITH NIPPLE, CAP, HOSE THREAD.

INSTALLATION
- A. PROVIDE VALVES SUITABLE TO CONNECT TO ADJOINING PIPING AS SPECIFIED FOR PIPE JOINTS. USE PIPE SIZE VALVES.
- B. 2" AND SMALLER: THREADED OR SOLDERED.
- C. 2-1/2" AND LARGER: FLANGED.
- D. SOLDER OR SCREW TO SOLDER ADAPTERS FOR COPPER TUBING.
- E. PROVIDE DRAIN VALVES AT MAIN SHUT-OFF VALVES, LOW POINTS OF PIPING AND APPARATUS.
- F. USE SPRING LOADED CHECK VALVES AT PUMPS AND WHERE INSTALLED IN VERTICAL POSITION.

SUPPORTS, ANCHORS, SEALS

REFERENCE STANDARDS
- A. PIPE SUPPORTS: ANSI B31.1, POWER PIPING.

INSERTS
- A. MALLEABLE IRON CASE, GALVANIZED STEEL SHELL, EXPANDER PLUG FOR THREADED CONNECTION WITH LATERAL ADJUSTMENT, TOP SLOT FOR REINFORCING RODS, LUGS FOR ATTACHING TO FORMS. USE INSERTS AND ANCHORS SUITABLE FOR TYPE OF STRUCTURAL CONDITIONS AND COMPONENTS.

PIPE HANGERS AND SUPPORTS
- A. HANGERS, PIPE SIZES TO 1-1/2": ADJUSTABLE STEEL RING (INSULATED PIPE) OR BAND (UNINSULATED PIPE).
- B. HANGERS, HOT PIPE SIZES 2" TO 4" AND ALL COLD PIPE SIZES: ADJUSTABLE STEEL CLEVIS.
- C. WALL SUPPORT, PIPE SIZES TO 3": CARBON STEEL HOOK.
- D. WALL SUPPORT, PIPE SIZES 4" AND OVER: WELDED STEEL BRACKET AND PIPE STRAP. ADJUSTABLE STEEL YOKE PIPE ROLL OR ROLLER CHAIR FOR HOT PIPE SIZES 5" AND OVER.
- E. VERTICAL SUPPORT: STEEL RISER CLAMP.
- F. FLOOR SUPPORT, HOT PIPE SIZES TO 4" AND ALL COLD PIPE SIZES: CARBON STEEL, ADJUSTABLE PIPE SADDLE, LOCKNUT NIPPLE, FLOOR FLANGE, CONCRETE PIER OR STEEL SUPPORT SIZED FOR PIPE ELEVATION.
- G. FOR PIPE SIZES 1-1/2" AND SMALLER, PROTECT INSULATED HORIZONTAL PIPE AT POINT OF SUPPORT BY 180 DEGREE, 12" LONG SHEET METAL SHIELD. NO HANGER SHALL PENETRATE OR CRUSH INSULATING MATERIAL.
- H. FOR PIPE SIZES 2" AND LARGER, PROTECT INSULATED HORIZONTAL PIPE AT POINT OF SUPPORT BY 180 DEGREE, 12" LONG GALVANIZED SHEET METAL SHIELD SURROUNDING 180 DEGREE INSERT OF HIGH DENSITY CALCIUM SILICATE INSULATION OF SAME THICKNESS AS ADJOINING PIPE INSULATION. ON COLD PIPING, EXTEND INSULATION INSERT 1" BEYOND SHEET METAL SHIELD AT EACH END. OVERSIZE HANGERS TO ACCOMMODATE SHIELDED INSERTS. NO HANGER SHALL PENETRATE OR CRUSH INSULATING MATERIAL. AT CONTRACTOR'S OPTION, PRE-MANUFACTURED THERMAL HANGER SHIELDS WITH INTEGRAL VAPOR BARRIER, EQUIVALENT TO VALUE ENGINEERED PRODUCTS PRO-SHIELD OR PRO-SHIELD N/T, MAY BE UTILIZED. FOR EXTERIOR INSTALLATIONS USE WEATHER SHIELD WITH ALUMINUM JACKET.
- I. PROVIDE COPPER PLATED HANGERS AND SUPPORTS FOR COPPER PIPING WHERE PIPING AND HANGER ARE IN DIRECT CONTACT WITH ONE ANOTHER.

PIPE HANGER RODS
- A. THREADED STEEL.

PIPE HANGERS AND SUPPORTS
- A. SUPPORT HORIZONTAL PIPING AS FOLLOWS:

NOMINAL PIPE SIZE	MAXIMUM HANGER SPACING			HANGER ROD DIAMETER
	STEEL	COPPER	SCHEDULE 40 PVC	
1-1/2" AND SMALLER	6'-0"	6'-0"	4'-0"	3/8"
2" TO 4"	10'-0"	10'-0"	4'-0"	3/8"
5" TO 8"	10'-0"	10'-0"	4'-0"	1/2"

- A. INSTALL HANGERS TO PROVIDE MINIMUM 1/2" CLEAR SPACE BETWEEN FINISHED COVERING AND ADJACENT WORK, EXCEPT WHERE UL LISTING FOR FIRE RATED CEILING REQUIRES 4" MINIMUM SEPARATION.
- B. SUPPORT HORIZONTAL CAST IRON HUB AND SPIGOT PIPE WITHIN 1'-0" OF EACH HUB AND WITH 5'-0" MAXIMUM SPACING BETWEEN HANGERS, EXCEPT THAT PIPE EXCEEDING 5'-0" IN LENGTH SHALL BE SUPPORTED AT INTERVALS NO GREATER THAN 10'-0". SUPPORT HORIZONTAL NO-HUB CAST IRON PIPE RUNS AT EACH FITTING AND AT EACH LENGTH OF PIPE LESS THAN 4'-0" WITH AT LEAST ONE HANGER. SUPPORT HORIZONTAL NO-HUB PIPES LONGER THAN 4'-0" ON BOTH SIDES OF EACH JOINT.
- C. PLACE HANGER WITHIN 1'-6" OF EACH ELBOW OR TEE.
- D. SUPPORT VERTICAL PIPING AT EVERY FLOOR. SUPPORT VERTICAL SOIL PIPE AT EACH FLOOR AT HUB. SUPPORT NO-HUB PIPE SO WEIGHT IS CARRIED FROM PIPE TO SUPPORT AND NOT FROM JOINT TO SUPPORT. SUPPORT 2" AND SMALLER PIPES MIDWAY BETWEEN FLOORS WITH RESTRAINTS ADEQUATE TO PREVENT PERPENDICULAR AXIAL MOVEMENT.
- E. SUPPORT EACH BRANCH PIPE TO EQUIPMENT AT TAKE-OFF AND WITHIN 12" OF TERMINATION.
- F. PROVIDE GALVANIZED STEEL INSULATION PROTECTION SADDLES AT ALL SUPPORT POINTS FOR INSULATED PIPES ON TRAPEZE HANGERS.
- G. ANCHOR ALL SUPPORTING LUGS OR GUIDES TO BUILDING STRUCTURE.
- H. ANCHOR AND SUPPORT WATER CONNECTIONS TO PLUMBING FIXTURES, IN PIPE CHASES OR WALLS, TO FIXTURE CARRIERS OR WASTE AND VENT PIPING. SUPPORTS SHALL BE SIMILAR TO ADJUSTO-SPACER SYSTEM AS MANUFACTURED BY THOMAS INDUSTRIES. PLACE ADJUSTO-SPACERS EVERY 10'-0" ON VERTICAL PIPE AND EVERY 5'-0" ON HORIZONTAL PIPE. INSULATE PIPE AREA IN CONTACT WITH ADJUSTO-SPACERS WITH DUCT TAPE, FELT LINER, OR PLASTIC LINER MATERIAL.

FLASHING AND SAFING
- A. WHERE EXPOSED PIPING PASSES THROUGH WALLS, FLOORS, ROOFS, PROVIDE CHROME PLATED OR STAINLESS STEEL ESCUTCHEON FOR PIPING.
- B. FLASH AND COUNTERFLASH WHERE MECHANICAL EQUIPMENT PASSES THROUGH WEATHER- OR WATER-PROOFED WALLS, FLOORS, ROOFS.
- C. PROVIDE PRE-MANUFACTURED PIPE BOOT FOR VENT AND/OR WASTE STACKS PASSING THROUGH ROOF. SECURE BOOT TO PIPE WITH STAINLESS STEEL BAND CLAMP OR OTHER CLAMPING DEVICE AS APPROVED BY ROOFING MANUFACTURER, RE: ARCHITECT.

SLEEVES
- A. PROVIDE PIPE SLEEVES TO APPLICABLE TRADES WITH PRECISE ROUGH-IN LOCATIONS FOR PIPES PASSING THROUGH CONCRETE OR MASONRY CONSTRUCTION. UNLESS OTHERWISE INDICATED, SLEEVES SHALL BE OF SIZE TO PROVIDE FROM 1/4" TO 1" CLEARANCE BETWEEN BARE PIPE AND SLEEVE. WHERE PIPE PASSES THROUGH CONCRETE FLOOR, EXTEND SLEEVE MINIMUM 1" ABOVE FINISHED FLOOR.
- B. SLEEVES IN BEARING WALLS, WATERPROOF MEMBRANE FLOORS, WET AREAS SHALL BE STEEL PIPE OR CAST IRON PIPE. SLEEVES IN NON-BEARING WALLS, FLOORS, CEILINGS SHALL BE STEEL PIPE OR CAST IRON PIPE.
- C. WHERE UNINSULATED PIPES PENETRATE BEARING WALLS (EXCLUDING FOUNDATIONS), FIRE RATED WALLS, PARTITIONS, FLOORS, PACK AND SEAL ENTIRE SPACE BETWEEN PIPE AND SLEEVE WITH DOW CORNING 3-6548 SILICONE RTV FOAM, OR 1" MINIMUM THICKNESS OF 3M FIRE BARRIER, CP-25 CAULK, OR 303 PUTTY ON EACH SIDE OF OPENING.
- D. ENCASE ALL INSULATED PIPES PENETRATING FIRE WALLS AND FLOORS IN 360 DEGREE METAL-SHIELDED INSULATION INSERTS AS MANUFACTURED BY VALUE ENGINEERED PRODUCTS. PACK AND SEAL SPACE BETWEEN SHIELD AND SLEEVE PER PRECEDING PARAGRAPH. EXTEND INSULATION INSERT ON ALL DOMESTIC WATER LINES 1" BEYOND SHEET METAL SHIELD.
- E. PIPE TO SLEEVE CLOSURE FOR PIPES PENETRATING FOUNDATIONS, WATERPROOFING MEMBRANE FLOORS, WET AREAS SHALL BE "LINK-SEAL."

METERS AND GAUGES

SUBMITTALS
- A. FURNISH MANUFACTURER'S SUBMITTAL DATA FOR: THERMOMETERS, PRESSURE GAUGES, FLOW MEASURING DEVICES, TEST PLUGS.

PORTABLE INSERTION TYPE THERMOMETERS
- A. 5" STEMS, ACCURATE WITHIN 1% OVER DIAL RANGE, HERMETICALLY SEALED.

CONSTANT READ THERMOMETERS
- B. MERCURY FREE THERMOMETER: 9" ALUMINUM CASE, NON-TOXIC HEAT TRANSFER MEDIUM-FILLED TUBE, SEPARABLE SOCKET CONNECTION, EXTENSION NECK TO CLEAR INSULATION, SWIVEL ANGLE STEM, FULLY ADJUSTABLE, ACCURATE WITHIN 1% OVER DIAL RANGE.

PORTABLE INSERTION TYPE PRESSURE GAUGES
- C. 4-1/2" DIAL, PHOSPHOR-BRONZE BOURDON TUBE, STAINLESS STEEL MOVEMENT, ACCURATE WITHIN 1/2% OVER SCALE RANGE.

CONSTANT READ PRESSURE GAUGES
- A. 4-1/2" OR 5" DIAL, STANDARD BLACK CASE, BRASS PRESSURE SNUBBER AND NEEDLE VALVE. ACCURATE WITHIN 1% OVER MIDDLE HALF OF SCALE RANGE, 2% OVER REMAINDER.

FLOW MEASURING DEVICE
- A. ORIFICE OR VENTURI TYPE, FACTORY ASSEMBLED WITH 300 PSIG RATED BALL VALVE OR 125 PSIG RATED MULTI-TURN GLOBE VALVE WITH ADJUSTABLE MEMORY STOP. SCHRADER TYPE PRESSURE TEST PORTS AND CAPS WITH PORT EXTENSIONS. CHAINED METAL TAG INDICATING LOCATION, GPM, AND METER READING.

INSTALLATION
- A. MOUNT THERMOMETERS TO BE EASILY READ FROM FLOOR.
- B. INSTALL FLOW MEASURING DEVICES PER MANUFACTURER'S RECOMMENDATIONS.
- C. FURNISH METERING STATION WITH PERMANENT METAL TAG MARKED WITH STATION DESIGNATION, GPM, METER READING FOR GPM.

MECHANICAL IDENTIFICATION

PIPE IDENTIFICATION
- A. IDENTIFY EACH PIPING SYSTEM AND INDICATE DIRECTION OF FLOW WITH BAND-SECURED OR SNAP-ON PRINTED LABELS IN MECHANICAL ROOM AND OTHER EXPOSED AREAS AND PRESSURE SENSITIVE, SELF-ADHESIVE LABELS IN CONCEALED AREAS. APPLY MARKINGS AFTER PAINTING AND CLEANING OF PIPING AND INSULATION IS COMPLETED.
- B. APPLY LEGEND AND FLOW ARROWS AT VALVE LOCATIONS, AT POINTS WHERE PIPING ENTERS OR LEAVES VALVE OR METER BOX, AT NOT LESS THAN EVERY 30'-0" OF RUN OR AT LEAST ONCE IN EVERY EXPOSED LOCATION. LOCATE MARKINGS FOR MAXIMUM VISIBILITY.
- C. WORDING/COLOR COMBINATIONS SHALL MEET ANSI SPECIFICATIONS UNLESS COLORS ARE SPECIFIED OTHERWISE.
- D. SIZES OF LETTERING AND FLOW ARROWS SHALL BE AS FOLLOWS:

OUTSIDE DIAMETER OF PIPE OR COVERING (INCLUSIVE)	SIZE OF LETTER	MINIMUM LENGTH OF FLOW ARROW
5/8" TO 2"	1/2"	2-1/2"
2-1/2" AND LARGER	1"	4"

MECHANICAL INSULATION

GENERAL
- A. ADHESIVES AND INSULATION MATERIALS: COMPOSITE FIRE AND SMOKE HAZARD RATINGS MAXIMUM 25 FOR FLAME SPREAD AND 50 FOR SMOKE DEVELOPED. ADHESIVES SHALL BE WATERPROOF.

PIPE INSULATION
- A. HEAVY DENSITY ONE-PIECE FIBERGLASS, FACTORY APPLIED VAPOR BARRIER JACKET, DOUBLE SURFACE ADHESIVE SELF-SEALING LAP, "K" FACTOR 0.23 AT 75 F MEAN TEMPERATURE. INSULATION EXPOSED TO WEATHER: PROTECT INSULATION WITH WEATHERPROOF METAL JACKET. JACKET SHALL BE FACTORY APPLIED ALUMINUM, 0.016" THICK, WITH LAMINATED VAPOR BARRIER AND "Z" GROOVE WATERTIGHT SEAL. SEAL EACH JOINT WITH SNAP STRAPS CONTAINING PERMANENT PLASTIC SEALING COMPOUND. SECURE WITH 1/2" WIDE STAINLESS STEEL BANDS. INSULATE FITTINGS WITH MITERED SECTIONS OF SAME MATERIAL. SEAL JOINTS WITH SEALING COMPOUND AND PREFORMED ALUMINUM BANDS.

INSTALLATION
- A. INSULATION SHALL BE CONTINUOUS THROUGH INSIDE WALLS. PACK AROUND PIPES WITH FIREPROOF SELF-SUPPORTING INSULATION MATERIAL, FULLY SEALED.
- B. FINISH INSULATION NEATLY AT HANGERS, SUPPORTS, OTHER PROTRUSIONS, AND WHERE THE INSULATION BREAKS FOR SERVICE OR ACCESS REQUIREMENTS.
- C. DO NOT COVER PIPING UNTIL TESTED.
- D. REMOVE AND REAPPLY INSULATION IF, IN OPINION OF ARCHITECT, IT HAS NOT BEEN INSTALLED IN FIRST CLASS WORKMANLIKE MANNER.
- E. REPAIR SEPARATION OF JOINTS OR CRACKING OF INSULATION DUE TO THERMAL MOVEMENT OR POOR WORKMANSHIP.

INSTALLATION OF PIPE INSULATION
- A. SEAL LONGITUDINAL LAPS WITH VAPOR BARRIER ADHESIVE OR WITH FACTORY APPLIED DOUBLE SURFACE PRESSURE SENSITIVE ADHESIVE SYSTEM. SEAL END JOINTS WITH 3" WIDE BUTT STRIPS SECURED WITH VAPOR BARRIER ADHESIVE. SEAL ALL SEAMS ON COLD WATER PIPING WITH BENJAMIN FOSTER 30-35 SEAL FAST MASTIC.

INSTALLATION OF INSULATION ON FITTINGS AND VALVES
- A. INSULATE FITTINGS AND VALVES WITH FIRMLY COMPRESSED FOIL-FACED FIBERGLASS BLANKET AND 25/50 UL RATED PVC FITTING COVERS (ZESTON OR EQUAL).
- B. WHERE INSTALLATION OF PVC FITTING COVERS IS PROHIBITED BY LOCAL AUTHORITIES, INSULATE FITTINGS AND VALVES WITH MOLDED FIBERGLASS FITTINGS OR FIRMLY COMPRESSED FOIL-FACED FIBERGLASS BLANKET. SECURE IN PLACE WITH 20 GAUGE CORROSION RESISTANT WIRE AND APPLY SMOOTHING COAT OF INSULATING CEMENT. FINISH WITH LAYER OF GLASS CLOTH EMBEDDED BETWEEN TWO COATS OF VAPOR BARRIER MASTIC. LAP GLASS FABRIC 2" ONTO ADJACENT INSULATION.
- C. INSULATION ON FITTINGS AND VALVES SHALL BE SAME THICKNESS AS ON PIPE.

INSULATION SCHEDULE:

SERVICE	PIPE SIZE	THICKNESS
DOMESTIC COLD WATER	ALL	1"
DOMESTIC HOT WATER, DOMESTIC HOT WATER RECIRCULATION	1-1/2" AND SMALLER	1"
	2" AND LARGER	2"
ROOF DRAIN, OVERFLOW DRAIN PIPING (VERTICAL LEADER FROM DRAIN BOWLS, AND ALL HORIZONTAL)	ALL	1/2"
ROOF DRAIN, OVERFLOW DRAIN BOWL	ALL	1"

TESTING AND BALANCING

STATUS OF SYSTEMS
- A. DO NOT BEGIN TESTING AND BALANCING WORK UNTIL SYSTEM HAS BEEN COMPLETED AND IS IN FULL WORKING ORDER.
- B. PUT SYSTEMS AND EQUIPMENT INTO FULL OPERATION AND CONTINUE OPERATION OF SAME DURING EACH WORKING DAY OF TESTING AND BALANCING. ASCERTAIN PRELIMINARY TAB REQUIREMENTS PRIOR TO COMMENCEMENT OF WORK THROUGH REVIEW OF AVAILABLE DRAWINGS AND SPECIFICATIONS. MAKE VISUAL OBSERVATIONS AT SITE DURING CONSTRUCTION TO DETERMINE LOCATION AND SUITABILITY OF REQUIRED BALANCING DEVICES.

REQUIREMENTS OF WORK
- A. DOMESTIC CIRCULATING HOT WATER
  - a. ADJUST MANUAL BALANCING VALVES IN SYSTEM SO ALL HOT WATER OUTLETS RECEIVE ADEQUATE SUPPLY OF HOT WATER.
  - b. WHEN BALANCING IS DONE, MARK VALVES IN BALANCED POSITION, SET LOCKING RINGS.

GENERAL PIPE TESTING
- A. TEST ALL PIPING SYSTEMS. CORRECT LEAKS BY REMAKING JOINTS. REMOVE EQUIPMENT NOT ABLE TO WITHSTAND TEST PRESSURE FROM SYSTEM DURING TEST. CONSULT GOVERNING CODES FOR SPECIAL SYSTEM REQUIREMENTS.
- B. TEST PIPING BEFORE BEING PERMANENTLY ENCLOSED.
- C. OBTAIN CERTIFICATES OF APPROVAL, ACCEPTANCE, COMPLIANCE WITH REGULATIONS OF AGENCIES HAVING JURISDICTION. SUBMIT TO OWNER.

TESTING AND BALANCING (CONTINUED)

CHLORINATION OF DOMESTIC WATER LINE
- A. STERILIZE DOMESTIC WATER SYSTEM AFTER PRESSURE TESTS HAVE BEEN COMPLETED. FLUSH ENTIRE SYSTEM, INTRODUCE CHLORINE OR HYPOCHLORITE TO NOT LESS THAN 50 PPM RESIDUAL CHLORINE. LET STAND FOR 24 HOURS MINIMUM.
- B. FLUSH SYSTEM WITH CLEAN WATER UNTIL CHLORINE CONTENT IS REDUCED TO 1 PPM AT POINT FURTHEST FROM WHERE CHLORINE WAS INTRODUCED.

SYSTEM TESTS
- A. HYDROSTATIC TEST - WATER PIPING (NEW PIPING ONLY): HAND PUMP SYSTEM TO GREATER OF 100 PSIG OR 150% OF OPERATING PRESSURE. MAINTAIN PRESSURE UNTIL SYSTEM HAS BEEN INSPECTED FOR LEAKS BUT NOT LESS THAN FOUR HOURS.
- B. COMPRESSED AIR OR NITROGEN TEST FOR NATURAL GAS PIPING: SUBJECT PIPING SYSTEM TO REQUIRED GAS PRESSURE WITH OIL FREE AIR OR NITROGEN. SYSTEM SHALL MAINTAIN PRESSURE FOR DURATION OF SOAPY WATER TEST OF EACH JOINT. TEST PRESSURE OF 100 PSIG FOR 4 HOURS OR TEST PRESSURE OF 60 PSIG OR ABOVE FOR 24 HOURS SHOWING NO PRESSURE DROP EXCEPT THAT CAUSED BY TEMPERATURE CHANGES. DO NOT USE FLAME OR OTHER LIQUID FOR TESTING. DO NOT REPAIR DEFECTS IN GAS PIPING OR FITTINGS; REMOVE AND REPLACE WITH SOUND MATERIAL.
- C. WASTE, DRAIN, VENT PIPING: FILL SYSTEM WITH WATER TO POINT OF OVERFLOW BUT NOT LESS THAN 10'-0" HEAD. MAINTAIN WATER LEVEL FOR 4 HOURS.

PLUMBING LEGEND

NOT ALL ITEMS LISTED BELOW ARE USED ON THIS SET OF PLUMBING DRAWINGS

PLUMBING PIPING

SYMBOL	ABBV.	DESCRIPTION
	CW	DOMESTIC COLD WATER
	HW	DOMESTIC HOT WATER
	HWC	DOMESTIC HOT WATER CIRCULATION
180	HW	DOMESTIC HOT WATER AT TEMP. SHOWN
T	T	TEMPERED WATER
TR	TR	TEMPERED WATER CIRCULATION
W	W	SOIL OR WASTE
GW	GW	GREASE WASTE
SOD	SOD	SEDIMENT & OIL DRAIN
BD	BD	BUILDING DRAIN
BS	BS	BUILDING SEWER
PD	PD	PUMP DISCHARGE LINE
D	D	DRAIN
	V	SANITARY VENT
SD	SD	STORM DRAIN
OD	OD	OVERFLOW DRAIN
SS	SS	STORM SEWER
F	F	FIRE SPRINKLER
FDC	FDC	FIRE DEPT. CONNECTION
G	G	NATURAL GAS LOW PRESSURE
MPG	MPG	NATURAL GAS MEDIUM PRESSURE
LPG	LPG	PROPANE GAS
CA	CA	COMPRESSED AIR

PLUMBING PIPING SYMBOLS

SYMBOL	DESCRIPTION
	ARROW IN LINE INDICATES DIRECTION OF FLOW
XX	INDICATES PIPE SLOPE DOWN
	REMOVE EXISTING
	BOTTOM PIPE CONNECTION
	PIPING UP
	PIPING DOWN
	FIXTURE TRAP OR DRAIN TRAP
	PIPING CAP OR PLUG

PIPING SYMBOLS

SYMBOL	DESCRIPTION
	WALL HYDRANT
	HOSE BIBB
	BALL VALVE
	CALIBRATED BALANCING VALVE
	GATE VALVE
	CHECK VALVE
	SOLENOID VALVE
	PRESSURE REDUCING VALVE
	GAS VALVE
	PUMP
	ATMOSPHERIC VACUUM BREAKER
	STRAINER
	RELIEF VALVE
	DOWNSPOUT NOZZLE
	WATER HAMMER ARRESTER
	UNION
	REDUCER
M	WATER METER
	PRESSURE GUAGE
	THERMOMETER
	FLOOR SINK
	AREA/FLOOR DRAIN
	ROOF DRAIN OR OVERFLOW DRAIN
	WALL CLEANOUT AND LINE CLEANOUT
	FLOOR CLEANOUT
	CONNECT NEW TO EXISTING
DTL SHT	RISER BUBBLE AND REFERENCE BUBBLE
EQUIP#	EQUIPMENT DESIGNATION

ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR	FCO	FLOOR CLEAN OUT	NC	NORMALLY CLOSED
AFG	ABOVE FINISHED GRADE	FPC	FIRE PROT. CONTRACTOR	NIC	NOT IN CONTRACT
AP	ACCESS PANEL	GC	GENERAL CONTRACTOR	NO	NORMALLY OPEN
BFP	BACKFLOW PREVENTER	IE	INVERT ELEVATION	NTS	NOT TO SCALE
DNZ	DOWNSPOUT NOZZLE	LCO	LINE CLEAN OUT	SCO	SURFACE CLEAN OUT
(E)	EXISTING	MC	MECHANICAL CONTRACTOR	TYP	TYPICAL
EC	ELECTRICAL CONTRACTOR	MH	MANHOLE	WCO	WALL CLEAN OUT
EL	ELEVATION	(N)	NEW	VTR	VENT THROUGH ROOF

PLUMBING SHEET INDEX

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SHEET TITLE:
PLUMBING LEGEND AND SPECIFICATIONS

P-100
SHEET OF

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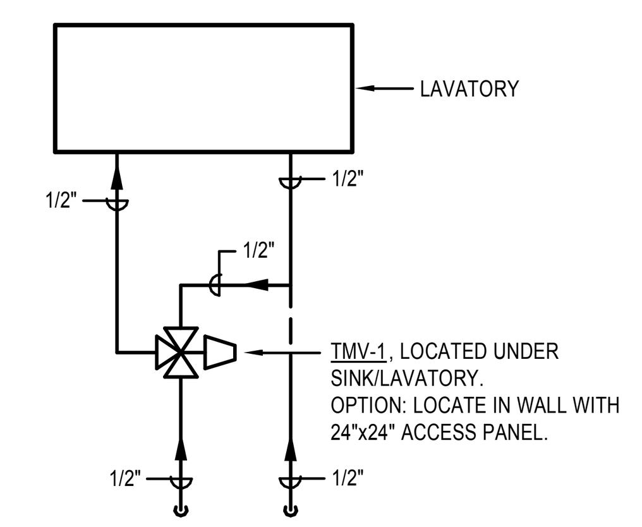
PLUMBING FIXTURE SCHEDULE

SYMBOL	TYPE	ADA	ACCESSORIES	FINISH	MANUFACTURER & MODEL NUMBER	FAUCET TRIM MANUFACTURER & MODEL NUMBER	ACCEPTABLE MANUFACTURERS	REMARKS	ROUGH IN CONNECTION SIZING: WASTE (INCHES)	VENT (INCHES)	HOT (INCHES)	COLD (INCHES)	FIXTURE UNIT COUNT (2006 IPC): # OF FIXTURES	W.S.F.U. EACH	W.S.F.U. TOTAL	D.F.U. EACH	D.F.U. TOTAL
WC-1	WATER CLOSET - FLOOR MOUNTED, TOP SPUD AUTOMATIC SENSOR OPERATED FLUSH VALVE, 15" HIGH, 1.28 GPF, ELONGATED BOWL	NO	HEAVY DUTY SEAT, COLOR SHALL MATCH FIXTURE	VITREOUS CHINA	AMERICAN STD. 3451.528	N/A	ZURN CRANE KOHLER	HIGH EFFICIENCY FLUSH CAPACITY FOR LOW WATER CONSUMPTION	4	2	--	1	12	10	120	4	48
WC-2	WATER CLOSET - FLOOR MOUNTED, TOP SPUD AUTOMATIC SENSOR OPERATED FLUSH VALVE, 17" HIGH, 1.28 GPF, ELONGATED BOWL	YES	HEAVY DUTY SEAT, COLOR SHALL MATCH FIXTURE	VITREOUS CHINA	AMERICAN STD. 3043.528	N/A	ZURN CRANE KOHLER	HIGH EFFICIENCY FLUSH CAPACITY FOR LOW WATER CONSUMPTION	4	2	--	1	2	10	20	4	8
UR-1	URINAL - WALL MOUNTED, AUTOMATIC SENSOR OPERATED FLUSH VALVE, 1.0 GPF, 3/4" TOP INLET SPUD, FLUSHING RIM	YES	FLOOR MOUNTED CARRIER WITH HANGER PLATE AND SUPPORT LEGS	VITREOUS CHINA	AMERICAN STD. 6501.61	N/A	ZURN CRANE KOHLER	HIGH EFFECIENCY FLUSH FOR LOW WATER CONSUMPTION. COORD. MOUNTING HEIGHT W/ ARCH.	2	2	--	3/4	6	5	30	2	12
L-1	LAVATORY - 20"x16" RECT. UNDER MOUNT, SINGLE HOLE FAUCET WITH 5" SPOUT, INFRA RED HANDS FREE CONTROL	YES	METAL DRAIN ASSEMBLY	VITREOUS CHINA WHITE CHROME FAUCETS	KOHLER K-2330	KOHLER K-7515	ZURN CRANE AMERICAN STD.	LEAD FREE FAUCET AND SUPPLY KIT PROVIDE WITH VANDAL RESISTANT AERATOR	2	2	1/2	1/2	12	2	24	1	12
FCO-1	FLOOR CLEANOUT WITH COUNTERSUNK PLUG HEAVY DUTY SECURED COVER	YES	--	NICKLE BRONZE	J.R.SMITH 4021S	--	JOSAM ZURN WADE/WATTS	--	--	--	--	--	--	--	--	--	--
FD-1	FLOOR DRAIN - 6" ROUND TOP, ROUND CAST IRON BODY ,FLASHING COLLAR, ADJUSTABLE STRAINER HEAD, SECURED GRATE	YES	--	NICKLE BRONZE	J.R. SMITH 2010-C	--	JOSAM ZURN WADE/WATTS	FOR FINISHED FLOOR AREAS PROVIDE WITH TRAP GUARDS J.R. SMITH 2692	NOTED ON PLANS	2	--	--	4	--	--	2	8
TMV-1	POINT OF USE THERMOSTATIC MIXING VALVE WITH HIGH TEMPERATURE LIMIT STOP, INTEGRAL CHECK VALVES	N/A	MINIMUM FLOW 0.5 GPM, MAXIMUM FLOW 7 GPM, LOCKING TEMPERATURE CONTROL	BRONZE	LEONARD #270-LF	--	LAWLER POWERS SYMMONS	SET MAXIMUM TEMPERATURE TO 110%%160 LEAD FREE ASSEMBLY	--	--	--	--	--	--	--	--	--
												TOTAL FIXTURE UNITS:			194		88
												(TOTAL GPM)			90		

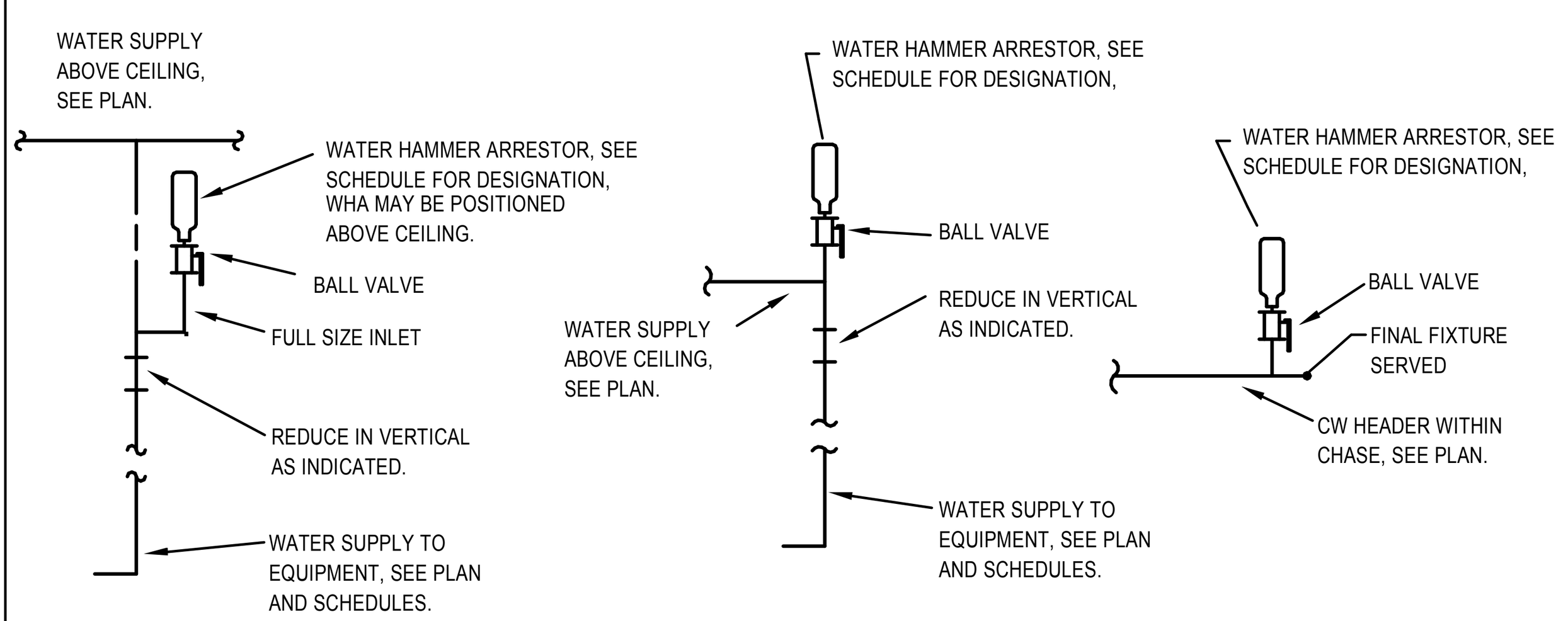
NOTE: ALL CONNECTIONS TO POTABLE WATER SYSTEM SHALL CONFORM TO NSF/ANSI-61 AND NSF/ANSI-372 EFFECTIVE 01/04/2014.



TMV-THERMOSTATIC MIXING VALVE DIAGRAM

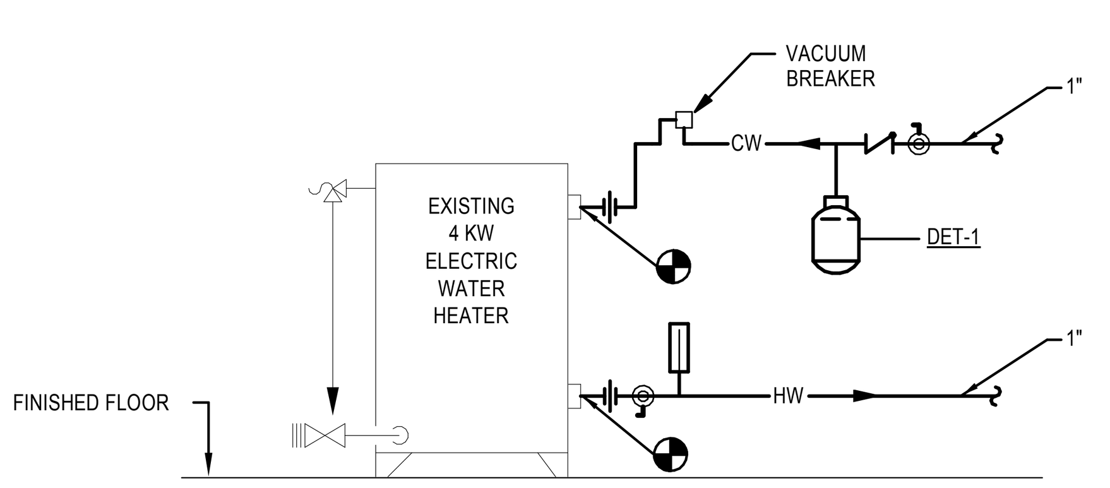
NOT TO SCALE

NOTE: WATER HAMMER ARRESTORS INSTALLED ABOVE CEILING SHALL BE POSITIONED IN ACCESSIBLE LOCATIONS WITH ACCESS PANELS PROVIDED AS NEEDED. ALL WATER HAMMER ARRESTORS INSTALLED WITHIN WALLS OR CHASES SHALL BE PROVIDED WITH ACCESS PANELS TO ALLOW FOR VALVE CLOSURE AND REMOVAL OF WATER HAMMER ARRESTOR.



WHA-WATER HAMMER ARRESTOR PIPING DIAGRAMS

NOT TO SCALE



EXISTING ELECTRIC WATER HEATER DIAGRAM

NOT TO SCALE

DOMESTIC EXPANSION TANK SCHEDULE

SYMBOL	MODEL	CAPACITY (GAL)	DIAMETER (IN)	HEIGHT (IN)	OPERATING WEIGHT (LBS)	SYSTEM CONNECTION (IN)	ACCEPTANCE FACTOR	NOTES
DET-1	ST-5C	2	8	14	--	1	0.9	1, 2

NOTES:
1. EQUIPMENT SCHEDULE BASED ON: AMTROL.
2. ACCEPTABLE MANUFACTURERS INCLUDE: TACO AND WATTS.

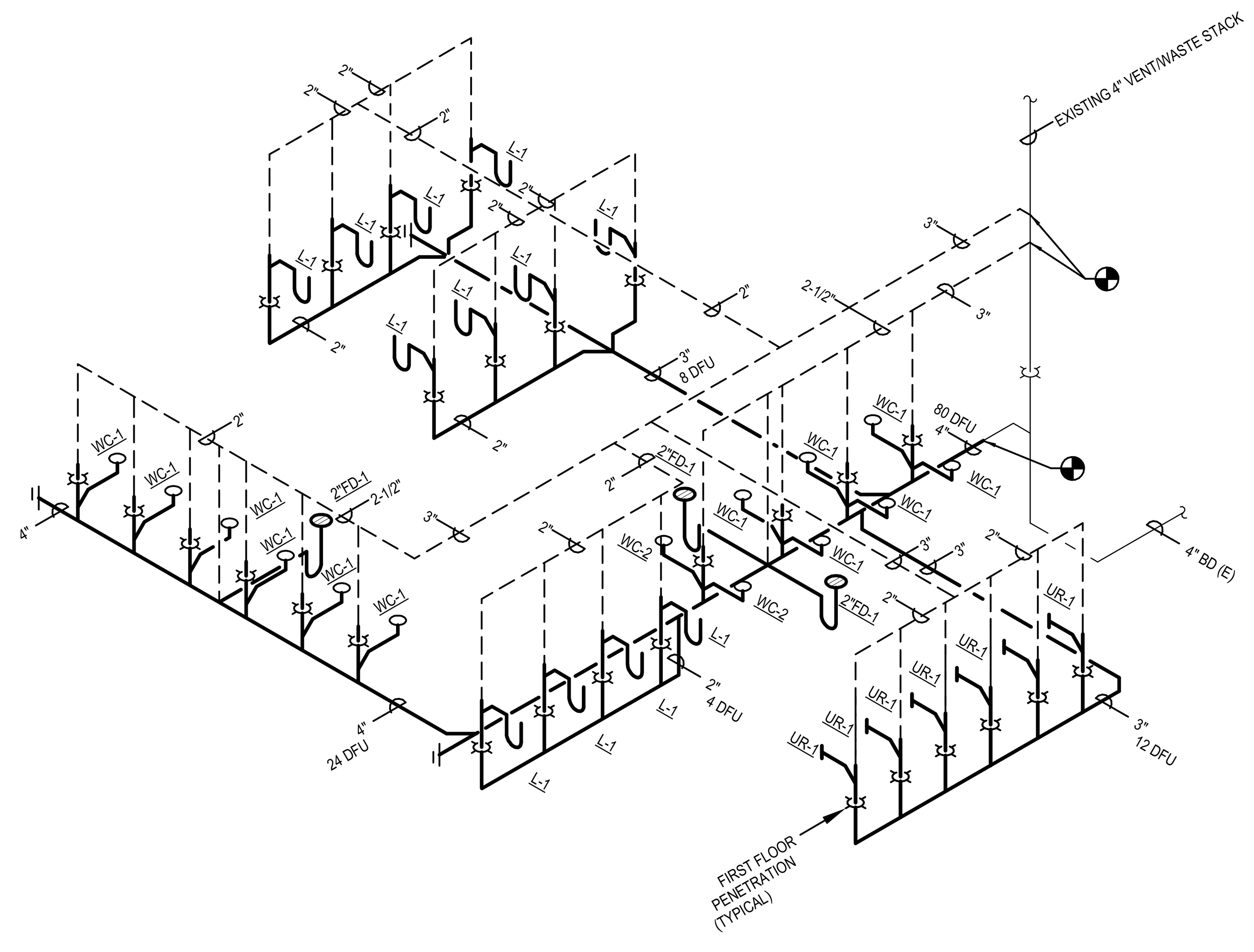
SPECIFICATION:
HYDRO-PNEUMATIC EXPANSION TANK, CONSTRUCTION IN ACCORDANCE WITH SECTION VII OF THE ASME BOILER AND PRESSURE VESSEL CODE. ALL WELDS SHALL CONFORM TO ASME. MAXIMUM OPERATING PRESSURE OF 150 PSIG. ALL INTERNAL COMPONENTS SHALL COMPLY WITH FDA REGULATIONS, SUITABLE FOR POTABLE WATER.

WATER HAMMER ARRESTOR SCHEDULE

SYMBOL	MODEL	PDI SYMBOL	CONNECTION SIZE	FIXTURE UNIT RATING	NOTES
WHA-A	1250-A	A	3/4"	1-11	1, 2
WHA-B	1250-B	B	1"	12-32	1, 2
WHA-C	1250-C	C	1"	33-60	1, 2
WHA-D	1250-D	D	1"	61-113	1, 2
WHA-E	1250-E	E	1"	114-154	1, 2
WHA-F	1250-F	F	1"	155-330	1, 2

NOTES:
1. EQUIPMENT SCHEDULE BASED ON ZURN.
2. ACCEPTABLE MANUFACTURERS INCLUDE: J.R. SMITH, SIOUX CHIEF, P.P.P. AND WILKINS.

SPECIFICATION:
STAINLESS STEEL PISTON TYPE WITH DOUBLE "O" RING SEAL, MALE THREAD INLET.



WASTE AND VENT RISER DIAGRAM

NOT TO SCALE

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PROJECT:

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P-101

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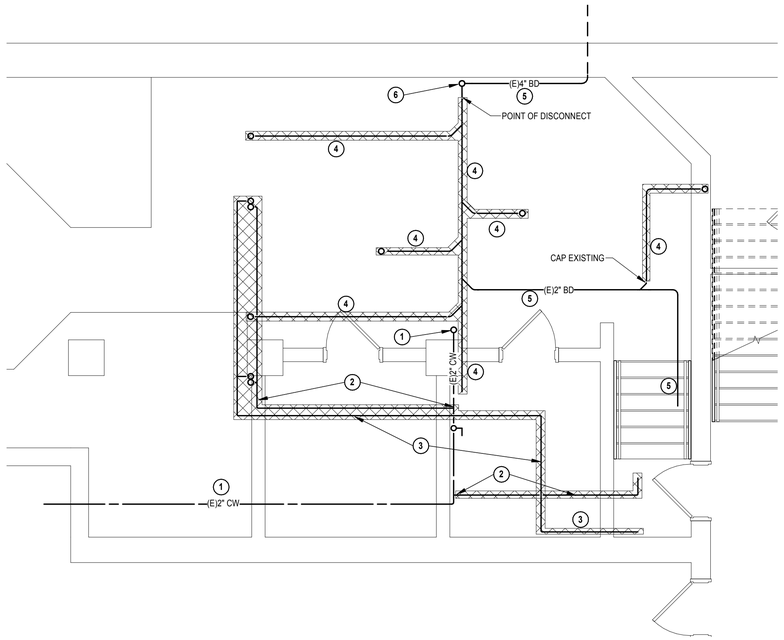
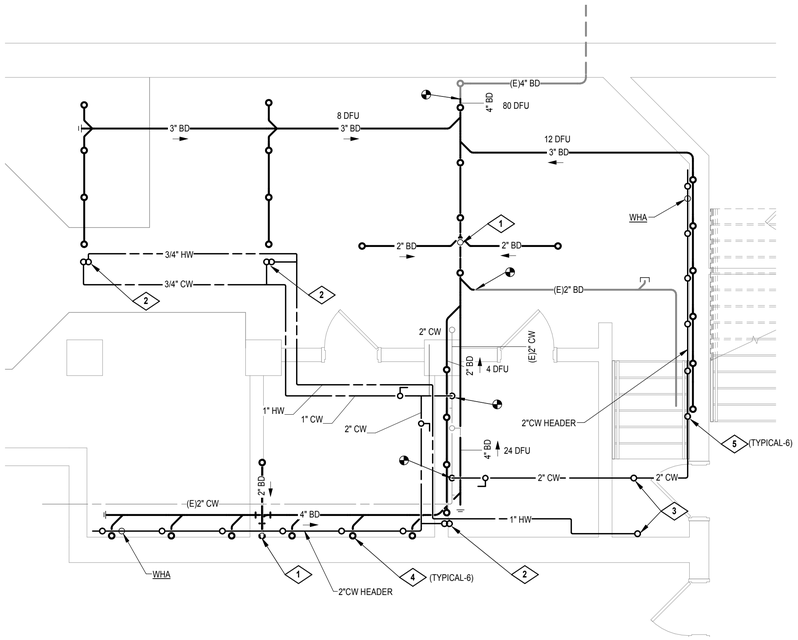


ENLARGED BASEMENT PLUMBING DEMO PLAN
SCALE: 1/4" = 1'-0"



ENLARGED BASEMENT PLUMBING PLAN
SCALE: 1/4" = 1'-0"

DRAWING NOTES:

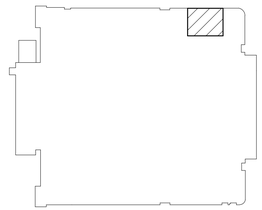
1. EXISTING 2"CW TO REMAIN.
2. EXISTING CW PIPING TO BE REMOVED BACK TO 2"CW MAIN. CAP WATER TIGHT.
3. EXISTING HW PIPING TO BE REMOVED IN ITS ENTIRETY BACK TO EXISTING HOT WATER HEATER (FIRST LEVEL).
4. EXISTING BUILDING DRAIN TO BE REMOVED BACK TO THE POINT OF DISCONNECT.
5. EXISTING BUILDING DRAIN TO REMAIN.
6. EXISTING WASTE/VENT STACK TO REMAIN.

GENERAL NOTES:

1. CONTRACTOR TO VERIFY ALL EXISTING CONDITIONS BEFORE COMMENCING WORK AND NOTIFY ARCHITECT AND ENGINEER IN WRITING OF DESCREPANCIES FROM THE CONTRACT DRAWINGS. COMMENCEMENT OF WORK WITHOUT NOTIFICATION CONSTITUTES ACCEPTANCE OF EXISTING CONDITIONS.
2. COORDINATE ALL DEMOLITION AND NEW WORK WITH ALL OTHER DIVISIONS AS REQUIRED TO PROVIDE A COMPLETE INSTALLATION.

DRAWING NOTES:

1. 2"V UP.
2. 3/4"HW & 3/4"CW UP.
3. 1"HW FROM ABOVE, 1"CW UP.
4. 1"CW UP.
5. 3/4"CW UP.



Key Plan

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ENLARGED BASEMENT PLUMBING PLANS

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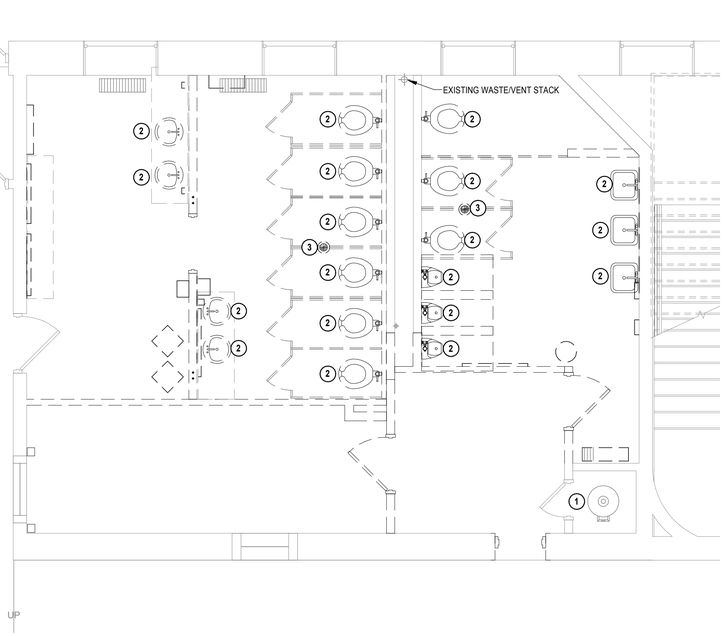
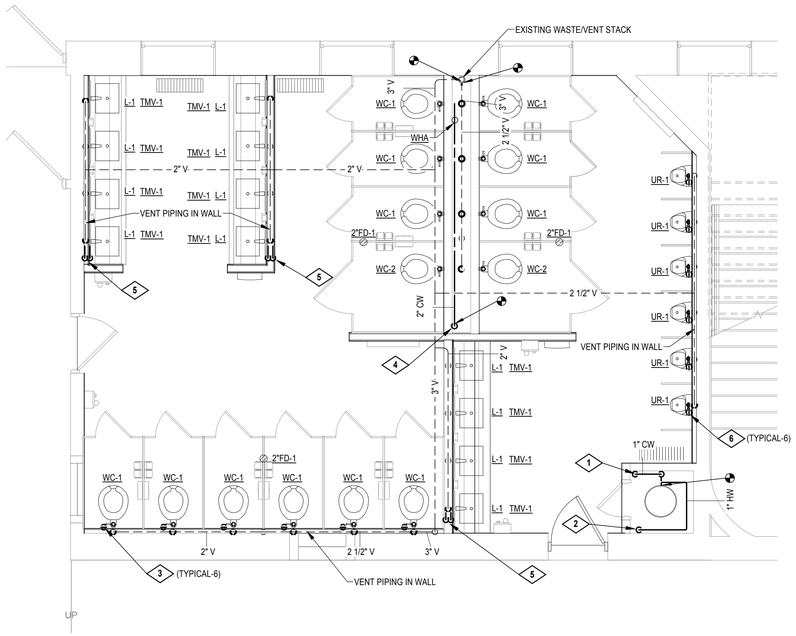


LEVEL 1 ENLARGED RESTROOM PLUMBING DEMO PLAN
SCALE: 1/4" = 1'-0"



LEVEL 1 ENLARGED RESTROOM PLUMBING PLAN
SCALE: 1/4" = 1'-0"

DRAWING NOTES:

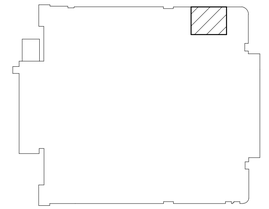
1. EXISTING 4 KW ELECTRIC WATER HEATER TO REMAIN. CONTRACTOR TO INSPECT FOR PROPER WORKING CONDITION AND REPORT. REMOVE ALL EXISTING HW & CW DISTRIBUTION PIPING, VALVES ASSOCIATED WITH WATER HEATER.
2. REMOVE EXISTING PLUMBING FIXTURES AND ASSOCIATED PIPING IN THEIR ENTIRETY.
3. REMOVE EXISTING FLOOR DRAIN AND ASSOCIATED PIPING. PATCH FLOOR TO MATCH EXISTING.

GENERAL NOTES:

1. CONTRACTOR TO VERIFY ALL EXISTING CONDITIONS BEFORE COMMENCING WORK AND NOTIFY ARCHITECT AND ENGINEER IN WRITING OF DESCREPANCIES FROM THE CONTRACT DRAWINGS. COMMENCEMENT OF WORK WITHOUT NOTIFICATION CONSTITUTES ACCEPTANCE OF EXISTING CONDITIONS.
2. COORDINATE ALL DEMOLITION AND NEW WORK WITH ALL OTHER DIVISIONS AS REQUIRED TO PROVIDE A COMPLETE INSTALLATION.

DRAWING NOTES:

1. 1"CW FROM BELOW AND CONNECT TO EXISTING WATER HEATER.
2. 1"HW FROM EXISTING WATER HEATER AND DOWN.
3. 1"CW FROM BELOW AND CONNECT TO PLUMBING FIXTURE.
4. CONNECT NEW 2"CW TO EXISTING 2'CW IN CHASE. HEADER IN CHASE AND PROVIDE A CONNECTION TO EACH PLUMBING FIXTURE.
5. 3/4"HW, 3/4"CW FROM BELOW. ROUTE IN FURRED WALL AND PROVIDE A CONNECTION TO EACH PLUMBING FIXTURE.
6. 3/4"CW FROM BELOW AND CONNECT TO PLUMBING FIXTURE.



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